University of Alberta

Internet Use: Social and Psychological Well-being

by

Mary Varughese Modayil

A thesis submitted to the Faculty of Graduate Studies and Research in partial fulfillment of the requirements for the degree of

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Douglas R. Wilson

Stanley Varnhagen

Roger C. Bland

Dedication

I would like to dedicate this work to
my grandparents

M.I. Chacko
and
M.I. Mariamma

Abstract

This study addressed the hypothesis that people who use the Internet have higher levels of disorder on social and psychological variables. An Internet-administered survey was given to Edmonton FreeNet and Calgary Community Net members. Comparisons were made between the Internet sample and the general population on a selection of social and psychological variables. General population data were obtained from the Edmonton Diagnostic Interview Schedule (DIS) and from the National Population Health Survey (NPHS). It was found that Internet users differed significantly from the general population on most variables with the more detrimental level being found in the Internet sample. However, it was also noted that for all variables for which time of onset was available, that the disorder had begun well before the respondent started using the Internet. This finding is not in accordance with the theory that Internet use causes elevated levels of disorder. Respondents' comments also suggested that the Internet had provided them more benefits than harm.

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Chapter 1 Introduction

1.1. Background

The soaring popularity of home computing and resulting networked computer systems have resulted in some trepidation concerning the Internet's impact on people's well-being. Many experts have proposed that a technologically advanced society contributes to a growing sense of detachment due to the impersonal nature of computers. Despite having the enormous potential to bring millions of people together, the Internet allows these interactions to be, for the most part, anonymous. As a result, a number of studies reported in the scientific literature suggest that Internet use may result in detrimental mental health consequences. For example, this idea has been expounded on in the media as evidenced by a recent article in the Globe and Mail that tries to illustrate that technology comes with a price (see Appendix A).

Contrary to what is being suggested, it may not be true that Internet users are disadvantaged. Even if it is shown that people on-line have lower well-being, it may not be due to the Internet. Since earlier life events have a tangible impact on current well-being, a likely possibility is that Internet users differ from the general population on a number of factors that existed prior to using the Internet. As such, the fact that there may be distinct social and psychological advantages to using the Internet for certain people may have been overlooked.

1.2. Objectives

This study examines Internet users to see if they differ from the general public on a number of factors to do with social and psychological well-being. It is hypothesized that Internet use causes lower social and psychological well-being. This translates into the following questions:

1. Is there a detectable difference between Internet users and the general population with regards to social variables, depression, or anxiety?

2. Do pre-existing factors explain the differences found between the general population and Internet users?

1.3. Organization of thesis

This thesis is organized into 5 chapters. Chapter 1 provides a brief introduction by outlining the objectives of the thesis. Chapter 2 gives an overview of the literature relevant to social isolation, social connections on-line, and the possibility that pre-existing factors may explain problems found in Internet users. Chapter 3 outlines the methodology and procedures used in this study with a description of all variables examined. Chapter 4 presents the results for all psychological and social variables studied in the Internet sample that showed statistical significance. Finally, Chapter 5 offers a discussion of the results in the context of the literature and presents conclusions.

Chapter 2 Literature Review

2.1. Social isolation: A supposed consequence of Internet use

The literature on social isolation may be traced back to the nineteenth century in Emile Durkheim's concept of 'anomie' (Durkheim, 1893). His assumptions were based on a social disorganizational model that equated social change during the Industrial Revolution with a breakdown in social contact. Subsequent researchers have debated the way in which technology may have contributed to worker alienation due to an upheaval of social norms (Smith, 1989; Travis, 1990).

Feelings of isolation and loneliness may have been already on the rise, however, due to a number of advances including urbanization, the printing press, and the value placed on individualism (Locke, 1998). Even before advent of technology for example, suburbs grew due to a desire for privacy and security but it resulted in the unforeseen consequence of isolating people (Minerd, 1999).

A number of studies have documented the importance of social connections. Rene Spitz, a French psychoanalyst, showed how critical the human presence is to child development during the 1940s (Emde, 1992). He demonstrated that infants who were not held, stroked, or even cuddled suffered retarded neurological development. The literature strongly suggests that social isolation is just as dangerous as smoking, high blood pressure, high cholesterol, obesity, or lack of exercise (House, 1988). A biological explanation of this may be that positive social connections reduce blood level concentrations of stress hormones and concomitantly stimulate the two neurotransmitters, dopamine and serotonin, that enhance attention and reduce anxiety (Panksepp, Siviy, & Normansell, 1985; Hallowell, 1999). Experimental evidence also supports this hypothesis. In a recent study of healthy volunteers aged 18 to 55 who were given nasal drops containing rhinoviral strains of the common cold, those with more types of social ties (to friends, family, work, and community) were less susceptible to colds than their counterparts (Cohen & Doyle, 1997).

Today, many researchers are concerned by the possibility of social isolation due to the impersonal nature of advanced communication tools. Sceptics question whether it is sensible to try revitalizing community by sitting alone, typing at networked computers, and making virtual friends (Stoll, 1995). It is suggested that electronic communication strips away personal attributes and "entrenches users in their individual fortresses" (Locke, 1998). On a computer screen, given that there is no convincing way to show how people feel, the result is unintended ambiguity and deception (Locke, 1998). In support of this view, the Carnegie-Mellon University study found higher levels of depression and loneliness in people who spent even a few hours on-line during their first two years of using the Internet (Kraut, Patterson, Lundmark, Kiesler, Mukopadhyay, & Scherlis, 1998). Critics argue that without intimate social relationships,

problems of distrust, loneliness, and depression will result.

2.2. People who use the Internet make social connections

In The Great Good Place (1989), Ray Oldenburg calls home the 'first place', and work the 'second place'. He says that the 'third place' exists on neutral ground and is similar to a good home in the psychological comfort and support that it extends. The on-line community may serve as a 'third place' even though it exists virtually in each person's imagination while they stare into a screen (Coate, 1996).

Some anecdotal evidence suggests that the Internet may actually increase social connections. The Information Highway Advisory Council (IHAC) speculated on the possibility and advised the Canadian federal government that if we accept conceptual frameworks set by metaphors without critical examination, we limit our ability to understand the implications and transformations of the way in which we relate to each other (Graham, 1997). Today there is a broad cross-section of the population on-line so it is unlikely that old computer-culture stereotypes are valid - such as the one about the antisocial geek who spends hours on-line (Dickinson and Sciadas, 1999).

In accordance with changing demographics, studies have found that many people want to use the Internet for communicating. A worldwide study of 5000 participants showed that since using the Internet, most people (55.6%) felt that they were more connected with people like themselves (GVU Center, 1998). It was also found that the more skills a person had online increased the likelihood that the person would connect to people. In a national random telephone survey, Katz and Aspden (1997) found that social and work networks appeared to be important for stimulating interest in the Internet with socio-personal development being the key driver.

Support groups may have also found a new home on the Internet because it provides anonymity and allows highly specialized topics to be widely discussed (Binik, Canto, Ochs & Meana, 1997). Such a connection may be especially important for stigmatized persons who feel misunderstood within their own traditional social networks, thereby creating a need for such individuals to access electronic social support, albeit without face-to-face contact (Mickelson, 1997). Many individuals attest that the Internet helped them ease concerns in their lives personally (Rheingold, 1993; Roberts, 1998). In her autobiographical account of how the Internet helped lift her out of depression, Nancy Roberts (1998) says that she found an "instant support network of women (and men) who understand…and help you overcome the loneliness that can be the most terrible consequence of disease, divorce, or bereavement" (p. 29).

2.3. Childhood traumas as pre-existing factors

Many children experience trauma during childhood and the numbers seem to be growing (Thompson and Cui, 2000). Children who are victims of domestic violence or child abuse or of exposure to traumatizing events often suffer short-term effects such as behavioral and emotional problems including depression (Hurley & Jaffe, 1990). This exposure is also correlated with later maladaptive or problematic adolescent behavior such as drug and alcohol abuse, violent and aggressive antisocial behavior, and interpersonal problems in school (Johnson, 1989; Wolfe, Zak & Wilson, 1986).

Childhood trauma is difficult to define because the definition depends on how much the traumatic effect overpowers the child. In recent literature, trauma is defined as an event or a series of events that renders the child helpless and breaks through ordinary coping strategies, or both (see Armsworth and Holaday, 1993; Falasca and Caulfield, 1999; Terr, 1990). Symptoms of trauma fall into one or more of the following categories: affect, memories, and behavior (Falasca and Caulfield, 1999). Affective symptoms of trauma may include anxiety, social and emotional withdrawal, and depression (Armsworth and Holaday, 1993). Memories can shape a child's expectations and feelings of helplessness by intrusive images, nightmares, and flashbacks (Allen, 1995). Finally, behavioral symptoms may include anxiety, fears, suicidal attempts, and sexual problems (Lanktree and Briere, 1995; Singer, Anglin, Song & Lunghofer, 1995). It is reasonable to conclude that these behaviors can persist through adolescence into adulthood (Falasca and Caulfield, 1999).

There is a growing amount of evidence that childhood trauma can lead to problems in adulthood. Some studies have found links between family instability and later drug abuse behavior (Free 1990; Kandel, Treiman, Faust & Single, 1976; Streit and Oliver, 1972). There is also much evidence to suggest that traumatic events in childhood play an important role in the development of psychological problems of adulthood. These may include dissociation, personality disorders, post-traumatic stress disorder (PTSD), depression, anxiety, and phobias (Berliner and Elliott, 1996).

There is a wealth of research that shows links between childhood trauma and dissociation or personality disorders in adulthood (Spiegal and Cardena, 1991). Dissociative symptoms are disruptions in the usually integrated mental processes such as thoughts, memories, identity, and perception (Apgar, 1999; Irwin, 1999). Draijer and Langeland (1999) showed that severity of dissociative symptoms in adults was significantly related to physical and sexual abuse. It is interesting to note that patients who reported having moms who drank heavily experienced the most significant dissociative symptoms. Another study suggests that childhood trauma experiences may precede positive symptoms of schizophrenia (Ellason and Ross, 1997). In a study of adult substance abusers, those who had experienced severe neglect and severe physical and emotional abuse as children were more significantly likely to exhibit symptoms of schizoid personality disorder (Ruggiero, Bernstein & Handelsman, 1999). Furthermore, researchers who collected data from a longitudinal study found that those children with documented abuse or neglect were four times as likely to be diagnosed for adult personality disorders than their counterparts (Johnson, Cohen, Brown, Smailes & Bernstein, 1999).

Evidence that childhood trauma is a precursor of adult depression, anxiety, and/or phobias is also

growing in current research literature. A pilot study that examined early life experiences of elderly women with severe depression showed that most subjects had suffered significant trauma as children including parental loss and family tension or discord (Mullan & Orrell, 1996). In examining the prevalence and effects of childhood trauma among college freshmen, Daugherty (1998) found that most had experienced at least one traumatic experience in childhood. In this study, the combination of trauma and fear of death or injury was associated with higher scores of current anxiety. It has also been shown that childhood trauma is significantly associated with certain phobias in adults (David, Giron & Mellman, 1995).

Recent literature provides much evidence linking childhood trauma to adverse adult health outcomes. It is important to examine whether these pre-existing factors are present in a greater proportion of those using the Internet than in the general population.

2.4. Summary of hypotheses/Conclusions from the literature

The major conclusions from the literature review are:

1. Both detrimental consequences and beneficial outcomes may be associated with long periods on-line.
2. Pre-existing characteristics may result in adverse psychiatric health. This conclusion may serve as an alternative explanation for the well-being of Internet users.

However, one alternative possibility may be that Internet users are no different in social or psychological dimensions than the general population.

This study will address the social and well-being of Internet users to see if they are disadvantaged compared to the general public. This will be accomplished by taking values from the general population on a number of social and psychological factors to see how they differ from the values collected from Internet users in this study.

Chapter 3 Methodology

3.1. Introduction

This study will focus on data collected from Internet users. Data extracted from two well-known surveys will provide the basis for comparison. Two samples were drawn from the National Population Health Survey (NPHS) – one from the 1994 survey and one from the 1996 survey data collection (Statistics Canada, 1994; Statistics Canada, 1996). The second survey was the Edmonton Area Study of Psychiatric Disorders (Bland, Newman & Orn, 1988), which used the Diagnostic Interview Schedule (DIS) to produce psychiatric diagnoses where warranted by the responses of the participants. The DIS is an instrument based on the third revision of the Diagnostic and Statistic Manual (DSM III-R) (Robins, Helzer, Croughan, Williams & Spitzer, 1981).

The methodology section describes how participants were selected for the Internet survey and sample characteristics of the Internet sample, the NPHS Alberta samples (1994 and 1996), and the DIS sample. Next, the instruments used for the present study are discussed and specific sections of the survey are presented. The procedure for data collection and the importance of the control strategy is explained. Finally, data analysis and the classification system used to group respondents by Internet use is described.

3.2. Participant Selection

Edmonton FreeNet is a charitable, volunteer, non-profit local company that teaches Internet literacy to the general public through providing economical Internet access and through free and low cost training classes (see www.ecn.ab.ca). As part of their mission, they also play a significant community role by developing Internet and computer literacy and by providing public access terminals in all public libraries and other public locations. Calgary CommunityNet has similar goals in facilitating the computer education of citizens and community organizations (see www.calcna.ab.ca).

All subscribers of the Edmonton FreeNet or Calgary Community Net were invited to participate in this survey. Edmonton FreeNet collaborated on this venture by sending a recruitment message (see Appendix D) to all of their account holders in their June 2000 monthly e-mail newsletter. As well, they posted this invitation on three newsgroups frequently accessed by their members. Edmonton FreeNet also generously offered to put up a web page under their "What's New" section which had a copy of the invitation previously sent out to all Edmonton FreeNet account holders. This message contained the reasons for conducting the study and a link to the URL containing the information page (see Appendix E). The recruitment message had a direct link to the

information page of the survey in order to minimize respondent loss. The information page offered two options at the end of its page: a link to start the survey or to return to Edmonton FreeNet's home page (the option to exit survey). Respondents were also given the option of exiting the survey at any point (by a direct link on every page of the survey). Once they chose to submit their responses, a thank you message appeared (see Appendix B at end of survey questions). This thank you page also offered a link to return to Edmonton FreeNet's home page. If respondents chose to exit prematurely without submitting their responses, no data were emailed to the researcher. Hence, only those participants who chose to click the "submit survey" button emailed their responses to the researcher.

Calgary Community Net kindly allowed the investigator to place a graphic link on their home page that stated "New Survey, Click Here". The Calgary Community-Net Chinese Canadian Special Interest Group also offered to draw attention to the survey via a graphic link to the survey. Both graphic links were placed for a 2-week period during June 2000. Those who clicked this graphic link were directly connected to an information page (see Appendix F). This information page also had two options at the end of its page: a link to begin the survey or to return to Calgary Community Net's home page. This survey was identical to that offered to Edmonton FreeNet users in all aspects. However, the thank you message offered a link to Calgary Community Net's home page.

Respondents were invited to participate in the survey by Edmonton FreeNet by electronic newsletter and through electronic newsgroups on June 1, 2000. The researcher also placed brochures explaining the survey next to all Edmonton Public Library FreeNet terminals to bring attention to the survey. Calgary Community Net and the Chinese Canadian Special Interest Group placed a notice on their web pages on Monday June 19, 2000. Data collection was terminated on July 12, 2000.

3.3. Instruments

To measure social and psychological well-being of internet users, participants were asked to complete a self-report questionnaire. The complete survey is reproduced in Appendix B. The survey consisted of six sections covering demographic information, computer usage, social support, well-being, childhood stressors (traumas), and diagnostic information. The source and general intent of each set of questions is more fully explained in Appendix B.

The majority of questions have been taken directly from either the National Population Health Survey (NPHS) or the Diagnostic Interview Schedule (DIS) both of which are in the public domain. The NPHS provided standard questions that have been used by other researchers to measure social support, well-being, and childhood and adult stressors. The DIS served to assess nervousness, hopelessness, anxieties, phobias, and depression. In order to determine whether symptoms developed before or after the commencement of regular online use, questions were included on the date of symptom onset.

3.3.1. National Population Health Survey (NPHS)

The NPHS collects economic, social, demographic, occupational, and environmental information pertaining to the health of the Canadian population every two years. It is a comprehensive survey that targets a sample of all households in all provinces but excludes populations on Indian Reserves, Canadian Forces Bases, and some remote areas in Quebec and Ontario. The survey primarily collects information on one member in each household who is randomly selected and then becomes the longitudinal panel respondent. It was designed to be flexible, responsive to changing policies, and to produce valid, reliable, and timely data. Its questions were designed for Computer Assisted Interviewing (CAI).

So far, the first two waves of the survey have been conducted in 1994 and 1996. The results of these two waves are now available to the public as microdata files and will be used for the present study. It is noted that the "public use" microdata files do differ from the "master" files held by Statistics Canada only in ways that protect the anonymity of the individual respondents. This study will only use information collected on adults in the NPHS. For this thesis, the researcher utilized only Alberta data from the NPHS. In 1994, the total Alberta NPHS sample size was 1164 respondents. In 1996, the total Alberta NPHS sample size was 12 751 respondents. Data from two different years were used because each survey had slightly different questions as explained below.

➢ Variables taken from NPHS 1994:

Table 1 lists the variables taken from the 1994 NPHS. A detailed explanation of each variable is given below.

Table 1: Variables from NPHS 1994

Variable Name	Description
Self-esteem	Self-esteem scale comprising 6 questions
Trauma	Childhood stressors comprising 7 questions
Unhappiness	Degree of unhappiness question

- ***Self-esteem***

The self-esteem scale reflects the amount of positive feelings that an individual holds about his/herself. The following six items made up the self-esteem scale:

1. You take a positive attitude toward yourself.
2. On the whole you are satisfied with yourself.

3. All in all you're inclined to feel you are a failure.*
4. You feel that you have a number of good qualities.
5. You feel that you are a person of at least equal worth to others.
6. You are able to do things as well as most people.

* denotes reverse scoring

Ratings were done on a 0 to 4 Likert-type scale, where 0=strongly disagree, 1=disagree, 2=neutral, 3=agree, 4=strongly agree. Each individual was given a score by the sum of the values from the six items.

- ***Trauma***

The "trauma" index is composed of 7 items which reflect exposure to stressful life experiences. Each respondent was asked whether the following things that may have happened while he/she was a child or a teenager:

1. Did you spend 2 weeks or more in the hospital?
2. Did your parents get a divorce?
3. Did your father or mother not have a job for a long time when they wanted to be working?
4. Did something happen that scared you so much that you thought about it for years after?
5. Were you sent away from home because you did something wrong?
6. Did either of your parents drink or use drugs so often that it caused problems for the family?
7. Were you ever physically abused by someone close to you?

Each question was given a value of 1 if the respondent answered "yes". The final score for each respondent was the sum of the seven items.

- ***Unhappiness***

Respondents were asked to choose how they would describe their usual state of well-being from five given choices on a drop-down menu. This question was scored on a scale from 1 to 5 where:

1=Happy and interested in life.

2=Somewhat happy.

3=Somewhat unhappy.

4=Unhappy with little interest in life.

5=So unhappy that life is not worthwhile.

Alberta data were directly compared to Internet data for this question.

➢ Variables taken from NPHS 1996:

Table 2 lists the variables taken from the 1994 NPHS. A detailed explanation of each variable is then

presented.

Table 2: Variables from NPHS 1996

Variable Name	Description
Membership	Member of voluntary organizations
Frequency of Participation	Frequency of participation in organizations
Social Support	Perceived social support index
Helping Others	Helped to care for others

- ***Membership***

Respondents were asked to answer the following question (yes or no):

"Are you a member of any voluntary organizations or associations such as school groups, community centers, ethnic associations or social, civic or fraternal clubs?"

Responses from the Internet sample were directly compared to Alberta data for this question.

- ***Frequency of Participation***

Respondents were asked to answer the following question:

"How often did you participate in meetings or activities of these groups in the past 12 months? If you belong to many, just think of the ones in which you are most active."

Responses were scored on a scale from 1 to 5 where 1=at least once a week, 2=at least once a month, 3=at least 3 or 4 times a year, 4=at least once a year, 5=Not at all. For purposes of data analysis, responses were grouped into 3 categories so that this variable was treated as a continuous variable. The modified categories were:

1=At least once a month or once a week

2=At least once a year or 3 to 4 times a year

3=Not at all.

Alberta data were also re-grouped into these three categories for comparison with Internet data.

- ***Social Support***

The perceived social support index is composed of four items:

1. Do you have someone you can confide in or talk to about your private feelings or concerns?
2. Do you have someone you can really count on to help you out in a crisis situation?
3. Do you have someone you can really count on to give you advice when you are making personal

decisions?

4. Do you have someone who makes you feel loved and cared for?

Respondents were asked to answer either "yes" (value=1) or "no" (value=0). Each individual was given a score by the summation of the 4 items. Scores from the Internet sample were directly compared to Alberta scores.

- ***Helping Others***

Respondents were asked to answer the following question:

"In the past month, have you helped to care for a relative or friend with a physical, emotional, or mental health problem?"

Responses from the Internet sample were directly compared to Alberta data for this question.

3.3.2. Diagnostic Interview Schedule (DIS)

The DIS was used to detect the prevalence of specific psychiatric disorders in the Edmonton Area Study of Psychiatric Disorders – a sample of about 7000 adult household residents (Bland et al., 1988). In the United States, Epidemiologic Catchment Area (ECA) studies used the DIS to interview over 20, 000 participants in the first wave of the survey (Eaton & Kessler, 1984; Regier et al., 1993). It has the ability to make specific psychiatric diagnoses, can be administered by trained lay interviewers, and has a companion computer program indicating diagnoses, thereby ensuring consistent data interpretation. The validity and reliability of the DIS have generally been reported to be satisfactory, with quite high kappa values (Robins et al., 1981; Wittchen. Semler, & Von Zerssen 1985).

➢ Variables taken from the DIS

Table 3 lists the variables taken from the DIS. A detailed explanation of each variable then follows.

Table 3: Variables from the DIS

Variable Name	Description
Hopelessness	Ever had feeling of hopelessness
Ever Anxious	Ever had an attack of anxiety
Anxious (3x)	Ever had 3 anxiety attacks close together
Anxious (6x)	Ever had anxiety attacks in 6 different weeks
Nervousness	Ever had feeling of nervousness
Any Phobia	Ever had any phobia
Agoraphobia	Ever had agoraphobia symptoms
Social Phobia	Ever had social phobia symptoms
Simple Phobia	Ever had simple phobia symptoms
Depression	Ever had a major depressive episode

- ***Hopelessness***

Respondents answered, "Yes" to the following question to be positively identified:

"Has there ever been a period of time when you felt that life was hopeless?"

Edmonton data were directly compared to Internet data for this question.

- ***Anxiety***

  - **Ever Anxious**

Respondents answered, "Yes" to the following question to be positively identified:

"Have you ever had a spell or attack when all of a sudden you felt frightened, anxious, or very uneasy in situations when most people would not be afraid?"

If respondents chose the "no" response, they were directed to not answer the other questions on anxiety that immediately followed in the survey.

  - **Anxiety (3x)**

Respondents answered, "Yes" to the following question to be positively identified:

"Have you ever had 3 spells like this close together – say within a 3-week period?"

- **Anxiety (6x)**

Respondents answered, "Yes" to the following question to be positively identified:

"Have spells like this occurred during at least 6 different weeks in your life?"

- ***Nervousness***

Respondents answered, "Yes" to the following question to be positively identified:

"Have you ever considered yourself a nervous person?"

Again, Edmonton data were directly compared to Internet data for this question.

- ***Any Phobia***

A respondent was classified as having any phobia if he/she was positively identified as having agoraphobia, social phobia, or a simple phobia as described below.

- ***Agoraphobia***

If a respondent answered, "Yes" to any of the following 4 statements, he/she was positively identified as having agoraphobia:

"Have you ever had such an unreasonable fear of any of the following that you tried to avoid it/them:

1. Being in a crowd.
2. Being on any kind of public transportation e.g. plane, bus, elevator
3. Going out of the house alone.
4. Being alone."

- ***Social Phobia***

If a respondent answered, "Yes" to any of the following 2 statements, he/she was positively identified as having social phobia:

"Have you ever had such an unreasonable fear of any of the following that you tried to avoid it/them:

1. Speaking in front of a small group of people you know.
2. Speaking to strangers or meeting new people."

- ***Simple Phobias***

This variable was assessed using either of two questions. The first question is the forced choice question:

"Have you ever had such an unreasonable fear of the following that you tried to avoid it: Being in a closed space."

If a respondent answered, "Yes" to the above statement, he/she was positively identified as having a simple phobia.

The second method of determining whether respondents had ever had a simple phobia was by asking the open-ended short answer question:

"Is there anything else you were unreasonably terrified to do or be near?"

The DIS asked several questions to assess simple phobias but for this study, only one question was asked. According to DIS criteria, all phobias that did not fit the agoraphobia or social phobia criteria were coded as simple phobias.

- ***Depression***

This variable was assessed using a number of questions from the DIS:

1. In your lifetime, have you ever had two weeks or more during which you felt sad, blue, depressed, or when you lost all interest and pleasure in things that you usually cared about or enjoyed?
2. Has there ever been a period of two weeks or longer when any of the following occurred?

I. Group 1 Criteria:

a. You lost your appetite?

b. You lost as much as 10 pounds without trying to?

c. Your eating increased so much that you gained as much as 10 pounds?

II. Group 2 Criteria:

d. You had trouble falling asleep, staying asleep, or waking up too early?

e. You were sleeping too much?

III. Group 3 Criteria:

f. You felt tired out all the time?

IV. Group 4 Criteria:

g. You talked or moved more slowly than is normal for you?

h. You had to be moving all the time i.e. you couldn't sit still?

V. Group 5 Criteria:

i. Your interest in sex was a lot less than usual?

VI. Group 6 Criteria:

j. You felt worthless, sinful, or guilty?

VII. Group 7 Criteria:

k. You had a lot more trouble concentrating than is normal for you?

l. Your thoughts came much slower than usual or seemed mixed up?

VIII. Group 8 Criteria:

m. You thought a lot about death – either your own or someone else's or death in general?

n. You felt like you wanted to die?

o. You felt so low that you thought of committing suicide?

p. You ever made definite plans to commit suicide?

q. You ever attempted suicide?

3. Did any of these spells occur just after someone close to you died?

A positive diagnosis for major depressive episode according to DIS criteria requires:

i) A period of two weeks of sadness (says "yes" to question 1 above)

ii) At least one symptom in 4 different groups (listed above) all at the same age

The depressive episode is ruled out if the respondent said that any "spell" occurred due to bereavement (says "yes" to question 3 above).

3.3.3. Unique Questions for Internet Sample

Several variables had no comparison data in the literature. For these variables listed in Table 4, high and low Internet users were compared for significant differences.

Table 4: Variables Present only in Internet Sample

Variable Name	Description
Social Isolation	Social isolation scale
Non-Internet Communication	Communicating with social support persons

- ***Social Isolation***

This variable is the score of 9 items comprising a subscale of the Dean Alienation Scale (Dean, 1961):

1. Sometimes I feel all alone in the world.
2. I don't get invited out by friends as often as I would like.
3. Most people today seldom feel lonely.*
4. Real friends are as easy as ever to find.*
5. One can always find friends if he/she shows him/herself friendly.*
6. The world in which we live is basically a friendly place.*
7. There are few dependable ties between people anymore.

8. People are just naturally friendly and helpful.*
9. I don't get to visit friends as often as I'd really like.

* denotes reversed scoring

Ratings were done on a 1 to 5 Likert-type scale where 1=strongly disagree, 2=disagree, 3=neutral, 4=agree, 5=strongly agree. Each individual was given a score by the summation of values from the nine items. Since there were no norms for this variable found in the literature, within Internet comparisons will only be done.

- ***Non-internet communication***

For each question that made up the perceived social support index, respondents were asked how they communicate with the person providing that aspect of support on a scale from 1 to 4 where:

1= Always on the Internet
2=Occasionally on the Internet
3=Hardly ever on the Internet
4=Never on the Internet

Responses were tallied and a score was given to each participant.

3.4. Short Answer Response Coding

The second approach to determine how the Internet may influence well-being was to ask open-ended questions. Four questions were asked:

1. Is there anything else you were unreasonably terrified to do or be near? If so please specify.
2. Has the time you spent on the Internet ever been affected by any of the above [phobias]? If so, how?
3. Has the time you spent on the Internet ever been affected by a spell of depression or these other problems?
4. Any thoughts you would like to share about the questions asked in this survey?

The responses from each participant were electronically transferred from the researcher's electronic mailbox to Microsoft Excel. For each question, the responses were examined to determine the underlying motivation for providing that response.

It was discovered that some motivations were common to more than one respondent. These motivations became the categories or "themes" into which the responses were grouped. Next, each response category was assigned a numerical code ("category code"). Once the verbatim responses were printed out in

table format, each response was assigned to one category code. The frequency of each code determined which motivations were more common than others.

3.5. Procedures

3.5.1. Ethical Issues

The University of Alberta Health Research Ethics Board approved the study proposal in February 2000. Permission was also granted from Edmonton FreeNet and Calgary Community Net to survey their account holders.

For this study, it is important to gain a sufficient number of responses within every age category for statistical purposes. However, the expectation is that only individuals aged 18 and over are capable of giving informed consent (Smith and Leigh, 1997). When the data were compiled, only data for individuals 18 and over were coded.

An information letter preceded the opening of the questionnaire (see Appendix E or F). Those who refuse to participate having read the information letter were asked to close their browser window or to click the exit button that re-directed them to the originating home page (Edmonton FreeNet or Calgary Community Net). This ensured that those who saw the questionnaire had agreed to participate willingly.

It was made clear that the participant may at any time withdraw from the study without penalty by closing the browser window containing the questionnaire or by clicking the exit button shown on every page of the survey. In this case, no results were forwarded to the researcher. When the questionnaire was completed, the responses were forwarded to the researcher's email mailbox for storage and analysis later.

Participants were assured that their responses would be kept confidential. The researcher was in no way able to identify an individual by his or her survey response. The only identifying material sent to the researcher included: which city the survey came from (Edmonton or Calgary); the browser type used to complete the survey (Internet Explorer, Netscape, or Lynx); and a time/date stamp. These three items were necessary to distinguish identical survey responses and this was a possible result if the respondent submitted the same survey twice accidentally by clicking the "Submit survey" button twice. No names or email addresses of the respondents were collected.

There was a possibility while completing the questionnaire that a participant may become concerned because of the nature of the questions. It should be noted that both the NPHS and DIS have been administered to tens of thousands of people previously with no known cause for concern. Nonetheless, the researcher suggested in the information letter that should any upset occur, they contact the Edmonton Mental Health clinic or their own health professional. Also, it was suggested that a paper copy of the questionnaire be printed for the individual to show his/her health professional. Instructions for doing so were clearly given in the information

letter.

3.5.2. Control Strategies

This study will use two control strategies. The first control consists of the previously surveyed "normal" population examined using the NPHS or the DIS (see Bland et al., 1988). The second control exists within the study itself. The proposed study will allow a comparison of high users with low users to test for a dose response.

3.6. Data Analysis

Table 5 lists the four independent (predictor) variables examined in this study. Further explanation of the variables HRSNET and AGE follows.

Table 5: Predictor Variables

Variable Name	Description
NET	Internet sample versus the General population
HRSNET	Hours per week using the Internet (grouped variable)
AGE	Age, grouped into younger (18-44 years) and older (45+ years).
SEX	Gender

3.6.1. Grouping Users by On-line Time

Internet users differ in the amount of time spent on-line per day and per week. To more easily summarize the nature of these differences for further analysis, groups were derived based on differences in time spent on-line. Grouping users based on responses to the Internet Use questions, respondents were classified into two types of users: low and high.

Respondents were asked two questions to assess level of Internet use:

1. On average, how many hours per week do you connect to the Internet?
2. On days that you connect, about how many hours do you use the Internet?

Both questions offered forced choice answers. In theory, each respondent's answer could fall into a range of days and hours. To assist analysis, a median value was computed for each combination. For example, if a person was online for 1 day to under 2 days per week for an average of 2 hours but less than 5 hours each day, the following calculation yielded the median value:

Lower range= 1 day x 2 days= 2.00

Upper range= 1.99 days x 4.99 days= 9.93

Median value=(9.93+2.00)/2=5.97

The median number of hours on-line for each possibility is listed in Table 6. Table 7 shows the actual number of users falling into each category.

Table 6: Median Hours On-line

		Hours / Day			
		.25-.99	**1-1.99**	**2-4.99**	**5-10**
Days / Week	**.5-.99**	.56	1.24	2.97	6.20
	1-1.99	1.11	2.48	5.97	12.45
	2-3.99	2.23	4.97	11.96	24.95
	4-6.99	3.96	8.96	21.44	44.95
	7	4.34	10.47	24.47	52.50

Table 7: Number of Internet Users by Frequency of Use

		Hours / Day				Total
		.25-.99	**1-1.99**	**2-4.99**	**5-10**	
Days / Week	**.5-.99**	1	0	0	0	1
	1-1.99	3	1	3	0	7
	2-3.99	6	8	2	0	16
	4-6.99	5	6	2	1	14
	7	20	37	26	11	94
Total		35	52	33	12	132

A person was classified as a low user (n=53) if he/she spent less than 10 hours on-line each week. This group comprised 40.15% of the sample.

High users comprised approximately 59.85% (n=79) of the sample. This group included people who went on-line for more than 10 hours each week.

3.6.2. Grouping People by Age

Age was treated as a dichotomous variable. A younger respondent was defined as being 44 years of age or younger. An older respondent was defined as being 45 years or older. Only two categories were created due to small sample size in the Internet sample resulting in some cells with an unacceptably low number ($n \leq 2$) for chi-square analysis.

The Internet sample was dichotomized based on which comparison sample data was available. For NPHS data, the lower age limit was 20 years old. For DIS data, the lower age limit was 18 years old. One reason for this 2 level split was because of the small sample size of the Internet sample. It is simply more difficult to make comparisons across the different groups (NPHS, DIS, Internet) when the within group sample sizes are so small. Moreover, the data obtained from NPHS was coded in 6 categories so it was not possible to compare raw data for ages across samples.

3.6.3. Data analysis for NPHS and DIS questions

F-ratios were used to assess the effects of the independent variables (NET, HRSNET, AGE, SEX) on: social support, the unhappiness scale, the self-esteem scale, and childhood stressors' which were continuous variables. Chi-square tests were performed to see whether there were significant independent variable effects on the dichotomous DIS variables (anxiety, phobias, depression) and the dichotomous variables from the NPHS (membership, helping others).

Variables will be grouped as belonging to either a psychological variable or social variable as outlined in Table 8 to ease data presentation.

Table 8: Psychological and Social Variables

Psychological Variables	Social Variables
Self-esteem	Social Support
Unhappiness	Non-Internet Communication
Childhood Trauma	Social Isolation
Depression	Membership
Anxiety (ever anxious)	Participation
Anxiety (3x)	Helping Others
Anxiety (6x)	
Nervousness	
Any Phobia	
Agoraphobia	
Social Phobia	
Simple Phobias	
Hopelessness	

Chapter 4 Results

4.1. Introduction

This study was designed to determine the effect of Internet use on a person's well-being. The following questions were considered in addressing this issue:

1. Is there a difference between Internet users and the general population on social and psychological factors?
2. Is there a difference between high and low users of the Internet on social and psychological factors?
3. If there was a difference, was the date of onset prior to the commencement of Internet use?

For categorical dependent variables, the chi-square test of association was performed to determine whether there was a statistically significant difference ($p \leq .05$) between groups. Then logistic regression analyses were performed to determine whether age and gender modulated the differences observed. For continuous dependent variables, full-factorial univariate analyses of variance test were performed to detect differences between groups.

The percentage and means of respondents in the comparison sample (Alberta NPHS or Edmonton DIS) is presented in Appendix G. The percentage and means of respondents for selected variables for the Internet sample is presented in Appendix H.

4.2. Demographics

There were 144 responses from both Edmonton (N=129) and Calgary (N=15) Internet users. Of these, 8 were excluded from analysis due to empty data sets (N=1), due to duplication (N=6), or due to restriction of age (N=1). The final Internet sample included both Edmonton FreeNet account holders (N=121) and Calgary Community Net account holders (N=15) for a total sample size of 136. It should be noted that while some respondents chose not to report some data (for example age, sex, or marital status), they were not excluded on this basis alone.

Internet respondents ranged in age from 18 to 76 years. For purposes of comparing data to available control populations, the Alberta sample was chosen as the level of level of analysis from the National Population Health Surveys (1994 and 1996) because the Internet survey collected data from both Edmonton and

Calgary. Similarly, the Edmonton sample was chosen for comparison purposes for the Diagnostic Interview Schedule (Bland et al., 1988).

The distribution of respondents by age, gender, and marital status from the four surveys is shown in Table 9. By age distribution, the Internet sample is comparable to the 1994 and 1996 Alberta population surveyed by the National Population Health Survey (NPHS).

Table 9: Demographic Characteristics

Characteristic	Internet Sample	NPHS 1994 Sample	NPHS 1996 Sample	DIS Sample	Edmonton 1999
Number	131	1164	12751	3956	481090
Sex (%)					
Male	64.2%	45.0%	47.4%	37.6%	49.1%
Female	35.8%	55.0%	52.6%	62.4%	50.9%
Age (%)					
18-24	9.2%	10.7%*	8.1%*	18.3%	11.6%*
25-34	21.4%	25.3%	24.0%	30.9%	21.8%
35-44	22.1%	22.3%	24.0%	17.7%	23.6%
45-54	22.1%	15.8%	16.3%	11.0%	16.9%
55-64	13.0%	10.7%	11.6%	10.4%	10.6%
65+	12.2%	15.1%	16.0%	11.8%	15.4%
Marital Status (%)					
Single	31.6%	21.4%	19.6%	28.0%	44.5%
Married	51.9%	59.7%	62.1%	51.8%	44.0%
Widowed, separated, or divorced	16.5%	18.9%	18.3%	20.2%	11.5%

** Age grouped as 20-24 years for these samples*

However, age-adjustments will be made to compare prevalence rates between the different samples when presenting summary data.

Although it cannot be assumed that Edmonton FreeNet is representative of the Internet population in Edmonton or that Calgary CommunityNet is representative of the Internet population in Calgary, these groups still represent a meaningful segment of the Internet population.

4.3. Comparisons: Internet users and the General Population

There were significant group differences between the comparison sample (Alberta sample from National Population Health Survey or Edmonton sample from Diagnostic Interview Schedule) and the Internet sample for all social and psychological variables examined in this study except depression and one aspect of anxiety.

4.3.1. Self-esteem

Respondents were asked how much they agreed with six statements on a scale from 0 to 4. They were assigned a final self-esteem score that ranged between 0 and 24.

The Alberta mean score on the 24-point self-esteem scale was higher than the Internet sample's mean (20.04 versus 18.02 respectively; F=31.73, d.f.=1,1228; p<.0001). The summary table for the analysis of variance (ANOVA) of self-esteem scores is shown in Table 10. Table 11 contains group means.

Table 10: Analysis of Variance for Self-esteem

Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
NET	320.85	1	320.85	31.73	0.000
SEX	20.59	1	20.59	2.04	0.15
AGE	20.06	1	20.06	1.98	0.16
NET * SEX	2.77	1	2.77	0.27	0.60
NET * AGE	27.85	1	27.85	2.75	0.10
SEX94 * AGE	17.09	1	17.09	1.69	0.19
NET* SEX * AGE	32.98	1	32.98	3.26	0.07
Error	12419.46	1228	10.11		
Total	12869.91	1235			

- R Squared = .035 (Adjusted R Squared = .029)

Table 11: Self-esteem Means Across Groups

Comparison	NPHS 1994 Sample Mean (SD)	Internet Sample Mean (SD)
NET	20.04 (3.04)	18.02 (4.56)
Males	20.18 (2.78)	18.24 (4.57)
Females	19.92 (3.32)	17.75 (4.46)
Younger Ages	20.88 (3.05)	17.96 (4.40)
Older Ages	19.97 (3.02)	18.68 (4.01)
Younger Males	20.15 (2.88)	18.59 (3.89)
Older Males	20.23 (2.62)	18.58 (3.89)
Younger Females	20.03 (3.19)	17.00 (4.96)
Older Females	19.79 (3.27)	18.94 (3.47)

4.3.2. Unhappiness

Unhappiness was measured using one question from the National Population Survey that asked how happy a respondent felt on a scale from 1 (happy and interested in life) to 5 (so unhappy that life is not worthwhile).

The Internet sample's mean score on the 5-point unhappiness scale question was significantly higher than the Alberta mean (1.56 versus 1.27 respectively; $F=28.68$, $d.f.=1,1279$; $p<.0001$). The summary table for the analysis of variance (ANOVA) of unhappiness scores is shown in Table 12. Table 13 contains group means.

Table 12: Analysis of Variance for Unhappiness

Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
NET	10.01	1	10.01	28.68	0.000
SEX	0.11	1	0.11	0.32	0.57
AGE	1.96	1	1.96	5.61	0.02
NET * SEX	0.13	1	0.13	0.38	0.54
NET * AGE	0.64	1	0.64	1.83	0.18
SEX* AGE	0.55	1	0.55	1.59	0.21
NET * SEX* AGE	0.82	1	0.82	2.33	0.13
Error	446.49	1279	0.35		
Total	460.63	1286			

- R Squared = .031 (Adjusted R Squared = .025)

Table 13: Unhappiness Means Across Groups

Comparison	NPHS 1994 Sample Mean (SD)	Internet Sample Mean (SD)
NET	1.27 (.56)	1.56 (.84)
Males	1.27 (.57)	1.53 (.82)
Females	1.27 (.55)	1.62 (.90)
Younger Ages	1.30 (.58)	1.70 (.87)
Older Ages	1.24 (.53)	1.42 (.80)
Younger Males	1.29 (.56)	1.74 (.92)
Older Males	1.25 (.58)	1.36 (.68)
Younger Females	1.30 (.59)	1.64 (.83)
Older Females	1.23 (.49)	1.59 (1.06)

There was a statistically significant difference overall between older ages and younger ages (F=5.61, d.f.=1,1279; p=.02). Older ages reported feeling more happy than younger ages.

There were notable differences by age and level of use within the Internet sample as shown in Table 14. Among those who used the Internet for less than an average of 10 hours per week, younger people tended to be more unhappy than older people (see Table 15).

Table 14: Analysis of Variance for Unhappiness: Internet Respondents Only

Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
HRSNET	3.928E-02	1	3.928E-02	.056	.813
SEX	2.172E-02	1	2.172E-02	.031	.860
AGE	2.712	1	2.712	3.893	.051
HRSNET* SEX	.634	1	.634	.910	.342
HRSNET * AGE	3.185	1	3.185	4.572	.035
SEX * AGE	1.163	1	1.163	1.670	.199
HRSNET * SEX * AGE	.625	1	.625	.897	.346
Error	82.909	119	.697		
Total	91.181	126			

Table 15: Unhappiness Means Across Groups

Comparison	Lower Users' Mean (SD)	Higher Users' Mean (SD)
Younger Ages	1.87 (1.03)	1.60 (.76)
Older Ages	1.19 (.40)	1.60 (.98)

4.3.3. Childhood Trauma

Respondents were asked 7 questions to assess whether they had experienced trauma during childhood or adolescence. Each respondent was given a final score that ranged between 0 (no trauma) to 7 (all 7 traumas experienced).

The Internet sample's mean score on the 7-point trauma scale (1.63±1.64) was significantly higher than the Alberta mean (1.63 versus 1.02, respectively; $F = 27.34$, d.f.=1, 1229; $p < .0001$). The summary table for the analysis of variance (ANOVA) of childhood trauma scores is shown in Table 16. Table 17 contains group means.

Table 16: Analysis of Variance for Childhood Trauma

Comparison	Type III Sum of Squares	df	Mean Square	F	Sig.
NET	46.18	1	46.18	27.47	0.000
SEX	19.87	1	19.87	11.82	0.001
AGE	11.68	1	11.68	6.95	0.01
NET* SEX	7.07	1	7.07	4.21	0.04
NET* AGE	3.84	1	3.84	2.29	0.13
SEX * AGE	0.03	1	0.03	0.02	0.89
NET * SEX* AGE	0.50	1	0.50	0.30	0.59
Error	2065.75	1229	1.68		
Total	2204.02	1236			

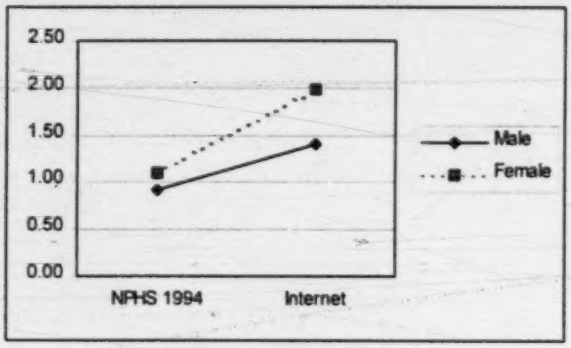
Table 17: Childhood Trauma Means Across Groups

Comparison	NPHS 1994 Sample Mean (SD)	Internet Sample Mean (SD)
NET	1.02 (1.30)	1.63 (1.64)
Males	.92 (1.17)	1.41 (1.68)
Females	1.09 (1.40)	1.98 (1.54)
Younger Ages	1,24 (1.44)	1.69 (1.55)
Older Ages	.70 (1.00)	1.39 (1.46)
Younger Males	1.09 (1.27)	1.38 (1.64)
Older Males	.65 (.93)	1.18 (1.26)
Younger Females	1.36 (1.56)	2.03 (1.38)
Older Females	.74 (1.04)	1.94 (1.82)

There was a statistically significant difference overall between males and females (F =11.82, d.f.=1,1229; p=.001). Females reported having experienced more trauma (1.16±1.43) than males (.99±1.26). There was also a statistically significant difference overall between younger and older people (F =6.95, d.f.=1,1229; p=.008). Younger respondents reported having experienced more trauma (1.28±1.46) than older respondents (.78±1.09).

The analysis of variance was statistically significant (F-ratio=4.208, p=.040) for the interaction of gender and data source (see Table 16). Figure 1, which shows that while the Internet sample shows higher trauma scores regardless of gender, the gap between men and women is nonetheless greater for the Internet sample than for the Alberta sample.

Figure 1 : Mean Childhood Trauma Scores of NPHS and Internet Sample by Gender



There was an overall difference by gender within the Internet sample as shown in Table 18.

Table 18 : Analysis of Variance for Childhood Trauma: Internet Respondents Only

Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
HRSNET	.135	1	.135	.063	.803
SEX	13.323	1	13.323	6.166	.014
AGE	1.119	1	1.119	.518	.473
HRSNET* SEX	1.140	1	1.140	.528	.469
HRSNET * AGE	1.693	1	1.693	.783	.378
SEX * AGE	.704	1	.704	.326	.569
HRSNET * SEX * AGE	5.581	1	5.581	2.583	.111
Error	254.962	118	2.161		
Total	285.429	125			

- R Squared = .107 (Adjusted R Squared = .054)

4.3.4. Depression

There was no difference between the Edmonton sample and the Internet sample with respect to the percentage of people who have ever experienced a major depressive episode (see Table 19). However, there were statistically significant differences overall by age and gender. Tables 20 and 21 contain the significant group percentages.

Table 19: Logistic regression analysis for Depression

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
NET	0.28	1.32	0.54	3.21	0.37	0.54
Sex	0.52	1.69	1.35	2.12	20.61	0.000
Age	-0.73	0.48	0.32	0.73	12.02	0.001
Sex x NET	0.69	1.99	0.62	6.42	1.33	0.25
Age x NET	0.75	2.11	0.60	7.42	1.36	0.24
Age x Sex	0.38	1.47	0.91	2.36	2.48	0.12
Age x Sex x NET	-6.10	0.002	0.000	96.81	1.26	0.26
Constant	-1.98	0.14			420.47	0.000

Table 20: Overall Gender Distribution of Depressed Respondents

Comparison	Males			Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Males vs. Females	165	1575	10.48	438	2514	17.42	37.16	<.0001

Table 21: Overall Age Distribution of Depressed Respondents

Comparison	Younger Ages			Older Ages			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger vs. Older	448	2710	16.53	154	1376	11.19	20.71	<.0001

More women (N=438; 17.42%) than men (N=165; 10.48%) had experienced a major depressive episode (Chi-square=37.164, d.f.=1, p<.0001). Being female increased the odds of depression by 1.69 (C.I.=1.35-2.12).

More younger people (N=448; 16.53%) than older people (N=154; 11.19%) had experienced a major depressive episode (Chi-square=37.164, d.f.=1, p<.0001). Being younger increased the odds of depression by 2.08 (C.I.=1.38-3.15). This suggests that the prevalence of depression is increasing in the Edmonton population. Many studies have found that the rates of depression are higher in younger cohorts, thus predicting higher rates overall as these cohorts age (Cross-National Collaborative Group, 1992; Klerman et al., 1985). This suggests that lifetime prevalence of depression is on the rise. However, rather

than implying an actual increase, this may be the result of differential recall of these events, where older people may forget more than younger people.

Within Internet differences were explored using logistic regression analysis and it was found that there was a notable main effect between high and low users as well as an interaction by age and level of use (see Table 22). Generally, low users were more likely (O.R.=.11, C.I.=.016-.753;p<.05) to have experienced a major depressive episode than high users. In total, 25 Internet respondents had a major depressive episode. Thirteen low users (24.53%) had experienced depression compared to twelve high users (15.19%).

Table 22: Logistic Regression Analysis for Depression: Internet Respondents Only

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
HRSNET	-2.197	.111	.016	.753	5.062	.024
Sex	.000	1.000	.195	5.121	.000	1.000
Age	-1.792	.167	.024	1.151	3.302	.069
Sex x HRSNET	2.015	7.500	.657	85.559	2.632	.105
Age x HRSNET	3.059	21.316	1.581	287.445	5.313	.021
Age x Sex	-7.006	.001	.000	3.911E+31	.030	.863
Age x Sex x HRSNET	-2.877	.056	.000	6.467E+41	.003	.955
Constant	-.405	.667			.395	.530

There was also an important interaction between age and level of Internet use (O.R.=21.316, C.I.=1.581-287.445; p<.05). Table 23 provides the proportion of people falling into each age category by level of use. For those who used the Internet for less than an average of 10 hours per week, younger people were more likely to have had a major depressive episode than older people (40.0% versus 7.7%). There were no real differences by age for people who used the Internet for more than 10 hours per week.

Table 23: Distribution of Respondents who had a Depressive Episode by Age and Internet Use

Comparison	Under 10 Hours			Over 10 Hours			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger Ages	10	25	40.00	7	44	15.91	3.770	.026
Older Ages	2	26	7.69	5	35	14.29	.638	.688

- **Time of Onset:**

Overall, 21 Internet respondents (84.0%) reported that they had their first major depressive episode prior to ever using the Internet.

4.3.5. Anxiety (ever anxious)

In total, 58 Internet respondents stated that they had experienced anxiety when asked: "Have you ever had a spell or attack when all of a sudden you felt frightened, anxious, or very uneasy in situations when most people would not be afraid?"

There was a higher percentage of people who had an attack of anxiety in the Internet sample (43.61%) than in the Edmonton sample (10.37%) (Chi-square=140.262, d.f.=1, p<.0001). Belonging to the Internet sample significantly increased the odds of reported anxiety by a factor of 10.35 (C.I.= 5.229-20.471). Table 24 shows that there were statistically significant main effects by age, gender, and data source as well as a three-way interaction. Tables 25, 26, 27, and 28 contain the significant group percentages.

Table 24: Logistic regression analysis for Ever Anxious

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
NET	2.34	10.35	5.23	20.47	45.04	0.000
Sex	0.81	2.25	1.71	2.96	33.70	0.000
Age	-1.12	0.33	0.18	0.61	12.56	0.000
Sex x NET	0.04	1.04	0.37	2.93	0.01	0.94
Age x NET	0.77	2.17	0.73	6.40	1.96	0.16
Age x Sex	0.62	1.86	0.94	3.65	3.22	0.07
Age x Sex x NET	-2.45	0.09	0.01	0.54	6.83	0.01
Constant	-2.55	0.08			439.53	0.000

Table 25: Overall Distribution of Anxious Respondents

Comparison	DIS Sample			Internet Sample			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
DIS vs Internet	410	3955	10.37	58	133	43.61	140.26	<.0001

Table 26: Overall Gender Distribution of Anxious Respondents

Comparison	Males			Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Males vs Females	120	1573	7.63	348	2514	13.84	36.84	<.0001

Table 27: Overall Age Distribution of Anxious Respondents

Comparison	Younger Ages			Older Ages			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger vs Older	354	2709	13.07	111	1375	8.07	22.55	<.0001

Table 28: Distribution of Anxious Respondents in DIS and Internet Samples

Comparison	DIS Sample			Internet Sample			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger Males	73	1006	7.26	17	38	44.74	65.30	<.0001
Older Males	12	483	2.48	16	44	36.36	92.01	<.0001
Younger Females	245	1635	14.98	19	29	65.52	54.51	<.0001
Older Females	80	831	9.63	3	17	17.65	1.21	0.22

More women (N=348; 13.84%) than men (N=120; 7.63%) had ever experienced an attack of anxiety (Chi-square=36.844, d.f.=1, p<.0001). Being female increased the odds of having an anxiety attack by 2.25 (C.I.=1.71-2.96).

More young people (N=354; 13.07%) than older people (N=111; 8.07%) had experienced an attack of anxiety (Chi-square=22.25, d.f.=1, p<.0001). Being younger was significantly associated with having had an anxiety attack (O.R.=3.07, C.I.=1.65-5.71).

The logistic regression analysis was statistically significant for the 3-wayinteraction of age, gender, and data source (see Table 24). Figures 2 and 3, which show that while the Internet sample had a higher proportion of respondents who had an anxiety attack regardless of gender, the gap between men and women is nonetheless greater for the Internet sample than for the Edmonton sample.

Figure 2 : Proportion of Anxious Male Respondents by Age and NET

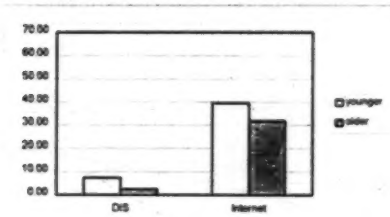
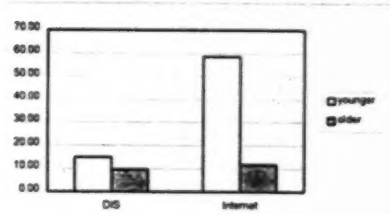


Figure 3: Proportion of Anxious Female Respondents by Age and NET



- **Time of Onset:**

Overall, 38 Internet respondents (88.4%) reported that they had feelings of anxiety prior to ever using the Internet.

4.3.6. Anxiety (3x)

Far more people in the Internet sample (N=35, 26.32%) than in the Edmonton sample (N=147; 3.72%) reported that they had experienced anxiety when asked, "Have you ever had 3 spells like this close together – say within a 3-week period?" Being part of the Internet sample increased the odds of having 3 anxiety attacks by 21.65 (C.I.=9.639-48.621).

Table 29 shows that there was a statistically significant main effect by gender (Chi-square=15.24, d.f.=1, $p<.0001$).. Overall, women were more than twice to experience three anxiety attacks (O.R.=2.64; C.I.=9.64-48.62). Tables 30 and 31 list percentages for each group with significant differences.

Table 29 : Logistic regression analysis for Three Episodes of Anxiety

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
NET	3.08	21.65	9.64	48.62	55.48	0.000
Sex	0.97	2.64	1.63	4.27	15.46	0.000
Age	-0.71	0.49	0.18	1.31	2.02	0.16
Sex x NET	-0.54	0.58	0.19	1.77	0.91	0.34
Age x NET	-0.57	0.57	0.12	2.58	0.54	0.46
Age x Sex	0.44	1.55	0.54	4.47	0.65	0.42
Age x Sex x NET	-0.35	0.71	0.08	5.98	0.10	0.75
Constant	-3.85	0.02			304.48	0.000

Table 30: Overall Distribution of Respondents who had Three Anxious Episodes

Comparison	DIS Sample			Internet Sample			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
DIS vs Internet	147	3955	3.72	35	133	26.32	154.48	<.0001

Table 31: Overall Gender Distribution of Respondents who had Three Anxious Episodes

Comparison	Males			Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Males vs Females	45	1573	2.86	137	2514	5.45	15.24	<.0001

4.3.7. Anxiety (6x)

In total, 36 people in the Internet sample stated that they had experienced anxiety when asked, "Have spells like this occurred during at least 6 different weeks in your life?" Far more Internet respondents (27.07%) than Edmonton DIS respondents (5.97%) were likely to report this (O.R.=8.61; C.I.=3.79-19.56).

Table 32 shows that there was a statistically significant main effect by gender (O.R.=2.68; C.I.=1.84-3.91). More women than men reported having experienced anxiety during six different weeks (8.39% versus 3.88%, respectively) (Chi-square=31.75, d.f.=1, p<.0001). Young people experienced anxiety over 6 different weeks more than older people (Chi-square=9.90, d.f.=1, p=.002). Tables 33, 34, and 35 show the frequencies

and percentages for the significant group differences.

Table 32: Logistic regression analysis for Six Different Weeks of Anxiety

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
NET	2.15	8.61	3.79	19.56	26.46	0.000
Sex	0.99	2.68	1.84	3.91	26.10	0.000
Age	-0.76	0.47	0.22	1.02	3.67	0.06
Sex x NET	0.12	1.12	0.37	3.41	0.04	0.84
Age x NET	0.26	1.30	0.34	5.00	0.15	0.70
Age x Sex	0.33	1.38	0.60	3.22	0.57	0.45
Age x Sex x NET	-1.30	0.27	0.04	2.02	1.62	0.20
Constant	-3.32	0.04			373.04	0.000

Table 33: Overall Distribution of Respondents who had 6 Different Anxious Episodes

Comparison	DIS Sample			Internet Sample			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
DIS vs Internet	236	3955	5.97	36	133	27.07	92.24	<.0001

Table 34: Overall Gender Distribution of Respondents who had 6 Different Anxious Episodes

Comparison	Males			Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Males vs Females	61	1573	3.88	211	2514	8.39	31.75	<.0001

Table 35: Overall Age Distribution of Respondents who had 6 Different Anxious Episodes

Comparison	Younger Ages			Older Ages			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger vs Older	202	2709	7.46	67	1375	4.87	9.90	0.002

Additionally, there were both main effects by level of use and age as well as an interaction between age and level of use for this variable falling below the significance level of 0.05 (see Table 36). Low users tended to have more episodes of anxiety (N=16; 30.77%) than high users (N=18; 23.08%). Younger users also

stated having more episodes of anxiety (N=23; 33.82%) than older users (N=10; 16.39%).

Table 36: Logistic regression analysis for Six Different Weeks of Anxiety: Internet Respondents Only

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
HRSNET	-1.792	.167	.033	.851	4.642	.031
Sex	-.134	.875	.176	4.341	.027	.870
Age	-2.140	.118	.017	.802	4.777	.029
Sex x HRSNET	1.925	6.857	.770	61.094	2.977	.084
Age x HRSNET	2.597	13.421	1.214	148.379	4.486	.034
Age x Sex	.664	1.943	.092	41.155	.182	.670
Age x Sex x HRSNET	-2.625	.072	.002	3.420	1.782	.182
Constant	.000	1.000			.000	1.000

There was a Table 37 shows more young people had six different weeks of anxiety if they used the Internet for under 10 hours rather than over 10 hours each week (48.0% versus 25.6%, respectively). On the contrary, older people were more likely to have anxiety at six different weeks if they used the Internet for more than 10 hours than under 10 hours each week (12.0% versus 20.0%, respectively).

Table 37: Distribution of Respondents who had Anxiety (6x) by Age and Level of Use

Comparison	Under 10 Hours			Over 10 Hours			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger Ages	12	25	48.00	11	43	25.58	3.550	.060
Older Ages	3	25	12.00	7	35	20.00	.672	.499

4.3.8. Any Phobia

Overall, 59 Internet respondents (45.04%) reported having a phobia at some point in their life. This was higher than that reported by the Edmonton sample (O.R.=2.74; C.I.=1.41-5.31).

There were also significant main effects by age and gender (see Table 38). Younger people had experienced more phobias in their lifetime (N=838; 30.93%) than older people (N=391; 28.48%). Women reported more phobias then men (Chi-square=109.16, d.f.=1, $p<.0001$). Tables 39, 40, and 41 list the

percentages for each group that had significant differences.

Table 38: Logistic regression analysis for Any Phobia

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
NET	1.01	2.74	1.41	5.31	8.92	0.003
Sex	0.76	2.14	1.78	2.57	66.83	0.000
Age	-0.29	0.75	0.56	0.99	4.02	0.05
Sex x NET	0.05	1.05	0.39	2.88	0.01	0.92
Age x NET	0.22	1.25	0.49	3.19	0.22	0.64
Age x Sex	0.23	1.26	0.90	1.75	1.79	0.18
Age x Sex x NET	-1.53	0.22	0.04	1.07	3.51	0.06
Constant	-1.33	0.27			293.39	0.000

Table 39: Overall Distribution of Phobic Respondents

Comparison	DIS Sample			Internet Sample			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
DIS vs. Internet	1172	3955	29.63	59	131	45.04	14.29	<.0001

Table 40: Overall Gender Distribution of Phobic Respondents

Comparison	Males			Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Males vs. Females	324	1571	20.62	906	2514	36.04	109.16	<.0001

Table 41: Overall Age Distribution of Phobic Respondents

Comparison	Younger Ages			Older Ages			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger vs. Older	838	2709	30.93	391	1373	28.48	2.61	0.11

4.3.9. Agoraphobia

More than four times as many Internet respondents (N=33; 25.58%) than in the Edmonton sample were likely to be positively diagnosed with agoraphobia (O.R.=4.27; C.I.=1.87-9.74). Table 42 shows that there was a statistically significant difference by gender as well. More women than men (12.17% versus 6.69%, respectively) reported agoraphobia symptoms (O.R.=2.10; C.I.=1.56-2.83) (Chi-square=32.04, d.f.=1, p<.0001). The significant frequencies and percentages are listed in Table 43 and 44.

Table 42: Logistic regression analysis for Agoraphobia

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
NET	1.45	4.27	1.87	9.74	11.92	0.001
Sex	0.74	2.10	1.56	2.83	23.56	0.000
Age	-0.09	0.92	0.58	1.46	0.13	0.72
Sex x NET	0.20	1.22	0.40	3.73	0.12	0.73
Age x NET	0.11	1.11	0.34	3.59	0.03	0.86
Age x Sex	0.05	1.05	0.62	1.79	0.03	0.86
Age x Sex x NET	-1.74	0.18	0.02	1.36	2.78	0.10
Constant	-2.74	0.07			430.32	0.000

Table 43: Overall Distribution of Phobic Respondents

Comparison	DIS Sample			Internet Sample			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
DIS vs Internet	379	3955	9.58	33	129	25.58	35.25	<.0001

Table 44: Overall Gender Distribution of Phobic Respondents

Comparison	Males			Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Males vs Females	105	1569	6.69	306	2514	12.17	32.04	<.0001

Time of Onset:

Overall, 19 Internet respondents (90.5%) reported that they had feelings of agoraphobia prior to ever using the Internet.

4.3.10. Social Phobia

People in the Internet sample (N=43; 32.82%) were significantly more likely to have had a social phobia than those in the Edmonton sample (O.R.=13.93; C.I.=6.81-28.50). Table 45 indicates there was also a significant main effect by gender. Being female increased the odds of having had a social phobia by 1.69 (C.I.=1.19-2.41). The significant group frequencies and percentages are reported in Tables 46 and 47.

Table 45: Logistic regression analysis for Social Phobia

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
NET	2.63	13.93	6.81	28.50	52.00	0.000
Sex	0.53	1.69	1.19	2.41	8.57	0.003
Age	-0.38	0.69	0.38	1.24	1.56	0.21
Sex x NET	-0.59	0.55	0.19	1.59	1.21	0.27
Age x NET	0.11	1.12	0.38	3.33	0.04	0.84
Age x Sex	0.08	1.08	0.54	2.16	0.05	0.83
Age x Sex x NET	-1.33	0.26	0.04	1.97	1.69	0.19
Constant	-3.06	0.05			402.86	0.000

Table 46: Overall Distribution of Respondents with Social Phobia

Comparison	DIS Sample			Internet Sample			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
DIS vs Internet	226	3955	5.71	43	131	32.82	151.53	<.0001

Table 47: Overall Gender Distribution of Respondents with Social Phobia

Comparison	Males			Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Males vs Females	89	1571	5.67	179	2514	7.12	3.34	0.07

- **Time of Onset:**

Overall, 32 Internet respondents (97.0%) reported that they had symptoms indicating social phobia before they began using the Internet.

4.3.11. Simple Phobias

Although there were no significant differences between the Internet sample and the Edmonton sample overall for reporting simple phobias (see Table 48 and 49), there was an overall main effect by gender (Chi-square=115.47, d.f.=1, p<.0001). Table 49 indicates that more women than men (30.83% versus 15.85%) reported simple phobias (O.R.=2.28; C.I.=1.88-2.78).

Table 48: Logistic regression analysis for Simple Phobias

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
NET	-0.54	0.59	0.21	1.67	1.01	0.32
Sex	0.83	2.28	1.88	2.78	68.57	0.000
Age	-0.19	0.83	0.61	1.12	1.53	0.22
Sex x NET	0.17	1.18	0.31	4.57	0.06	0.81
Age x NET	0.72	2.05	0.53	7.91	1.09	0.30
Age x Sex	0.11	1.11	0.78	1.58	0.34	0.56
Age x Sex x NET	-1.03	0.36	0.05	2.73	0.98	0.32
Constant	-1.60	0.20			359.90	0.000

Table 49: Overall Gender Distribution of Respondents with Simple Phobias

Comparison	Males			Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Males vs Females	249	1571	15.85	775	2514	30.83	115.47	<.0001

- **Time of Onset:**

All 17 Internet respondents (100%) who indicated having a simple phobia reported that they had this phobia prior to ever using the Internet.

4.3.12. Hopelessness

The odds were significantly greater that the Internet sample had ever experienced hopelessness (O.R.=4.76; C.I.=2.45-9.27) compared to the general population (Table 50). Sixty-one people in the Internet sample (45.86%) reported ever having feelings of hopelessness (Table 51). Overall, more women than men (28.88% versus 23.90%), respectively) had ever experienced these feelings (Chi-square=12.16, d.f.=1, p<.0001) (see Table 52). Table 53 shows that more young people reported hopelessness than older people (Chi-square=10.80, d.f.=1, p=.001).

Table 50: Logistic regression analysis for Hopelessness

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
NET	1.56	4.76	2.45	9.27	21.09	0.000
Sex	0.27	1.31	1.10	1.57	8.95	0.003
Age	-0.27	0.76	0.58	0.99	4.05	0.04
Sex x NET	-0.06	0.94	0.34	2.62	0.01	0.91
Age x NET	-1.25	0.29	0.11	0.76	6.28	0.01
Age x Sex	0.08	1.09	0.78	1.50	0.24	0.62
Age x Sex x NET	-0.07	0.93	0.18	4.76	0.01	0.93
Constant	-1.13	0.32			238.07	0.000

Table 51: Overall Distribution of Respondents with Feelings of Hopelessness

Comparison	DIS Sample			Internet Sample			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
DIS vs Internet	1041	3955	26.32	61	133	45.86	24.96	<.0001

Table 52: Overall Gender Distribution of Respondents with Feelings of Hopelessness

Comparison	Males			Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Males vs Females	376	1573	23.90	726	2514	28.88	12.16	<.0001

Table 53: Overall Age Distribution of Respondents with Feelings of Hopelessness

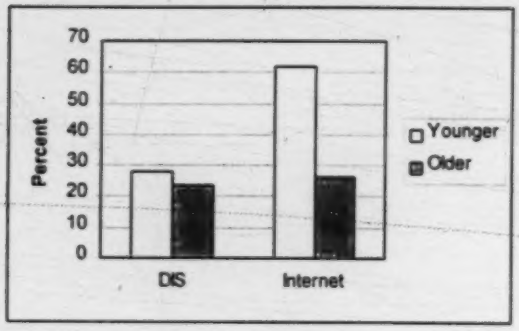
Comparison	Younger Ages			Older Ages			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger vs Older	773	2709	28.53	326	1375	23.71	10.80	0.001

There was also a 2-way interaction between age and NET (Table 50 above). Figure 4 and Table 54 show that while the Internet sample had a higher proportion of people with reported hopelessness, the gap was greater between younger ages than older ages.

Table 54: Distribution of Respondents with Feelings of Hopelessness in DIS and Internet Samples

Comparison	Edmonton DIS			Internet Sample			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger Ages	731	2641	27.68	42	68	61.76	37.77	<.0001
Older Ages	310	1314	23.59	16	61	26.23	0.22	0.64

Figure 4 : Proportion of Respondents by Age and NET for Hopelessness



Within the Internet sample, Table 55 suggests there was a main age effect (O.R.=.03; C.I.=.003-248); p=.001) and a 2-way interaction between age and level of Internet use (O.R.=14.73; C.I.=1.32-164.43; p=.03). Table 56 shows the proportion of people at different ages by level of use. More young people than older people reported feelings of hopelessness (N=42; 61.76% versus N=16; 26.23%, respectively). Figure 5 shows that while younger people were more likely to have had feelings of hopelessness regardless of level of use, they tended to report more hopelessness if they were "low" users. This trend was reversed for older respondents.

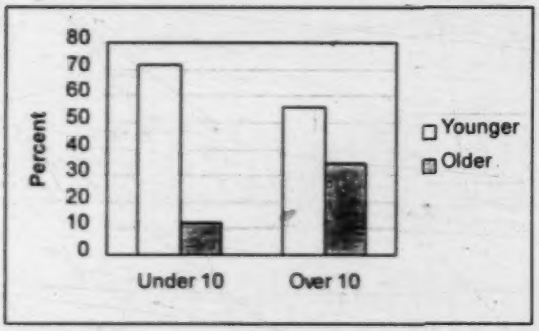
Table 55 : Logistic Regression Analysis for Hopelessness

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
HRSNET	-1.243	.288	.052	1.608	2.011	.156
Sex	-.693	.500	.076	3.293	.519	.471
Age	-3.526	.029	.003	.248	10.504	.001
Sex x HRSNET	1.138	3.120	.312	31.188	.938	.333
Age x HRSNET	2.690	14.733	1.320	164.427	4.777	.029
Age x Sex	1.224	3.400	.137	84.323	.558	.455
Age x Sex x HRSNET	-1.535	.215	.005	9.438	.634	.426
Constant	1.386	4.000			3.075	.080

Table 56: Distribution of Respondents by Level of Use who Experienced Hopelessness

Comparison	Under 10 Hours			Over 10 Hours			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger Ages	18	25	72.00	24	43	55.81	1.754	.185
Older Ages	3	25	12.00	12	35	34.29	3.863	.049

Figure 5 : Proportion of Respondents by Age and HRSNET for Hopelessness



Time of Onset:

Overall, 46 Internet respondents (85.2%) reported that they had felt this feeling of hopelessness before they ever began using the Internet.

4.3.13. Nervousness

Although Table 57 indicates there were no significant differences overall between the Internet sample and the general population for reported feelings of nervousness, Tables 58 and 59 show an overall age and gender effect. More women than men (25.26% versus 16.08%, respectively) reported feeling nervousness (O.R.=1.62; C.I.=1.32-1.97) feelings (Chi-square=47.89, d.f.=1, $p<.0001$). The difference between younger and older people was statistically significant but not meaningful (21.89% versus 21.24%). There was also a 2-way interaction between age and gender that approached statistical significance ($p=.01$). Tables 60 and 61 list significant percentages for men and women.

Table 57: Logistic regression analysis for Nervousness

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
NET	0.71	2.03	0.99	4.18	3.72	0.05
Sex	0.48	1.62	1.32	1.97	22.00	0.000
Age	-0.38	0.68	0.50	0.94	5.49	0.02
Sex x NET	0.35	1.42	0.51	3.98	0.44	0.51
Age x NET	0.52	1.68	0.62	4.56	1.04	0.31
Age x Sex	0.47	1.60	1.10	2.32	6.10	0.01
Age x Sex x NET	-2.08	0.13	0.02	0.73	5.32	0.02
Constant	-1.61	0.20			361.39	0.000

Table 58: Overall Gender Distribution of Respondents with Feelings of Nervousness

Comparison	Males			Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Males vs Females	253	1573	16.08	635	2514	25.26	47.89	<.0001

Table 59: Overall Age Distribution of Respondents with Feelings of Nervousness

Comparison	Younger Ages			Older Ages			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger vs Older	593	2709	21.89	292	1375	21.24	0.23	0.63

Table 60: Distribution of Male Respondents with Feelings of Nervousness

Comparison	Younger Males			Older Males			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger Males vs. Older Males	179	1044	17.15	72	527	13.66	3.17	0.08

Table 61: Distribution of Female Respondents with Feelings of Nervousness

Comparison	Younger Females			Older Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger Females vs. Older Females	414	1664	24.88	220	848	25.94	0.34	0.56

The 3-way interaction (age x sex x NET) is illustrated in Figures 6 and 7 with reported percentages in Table 62. While the Internet sample had higher proportions of people reporting feelings of nervousness than the general population, the gap was greatest for older men and younger women. More older men in the Internet sample than in the general population reported having feelings of nervousness (31.82% versus 12.01%, respectively). Also, more young women in the Internet sample than in the general population had feelings of nervousness (48.28% versus 24.46%, respectively).

Table 62: Distribution of Respondents with Feelings of Nervousness in DIS and Internet Samples

Comparison	DIS Sample			Internet Sample			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger Males	168	1006	16.70	11	38	28.95	3.87	0.05
Older Males	58	483	12.01	14	44	31.82	13.42	<.0001
Younger Females	400	1635	24.46	14	29	48.28	8.64	0.003
Older Females	217	831	26.11	3	17	17.65	0.62	0.58

Figure 6 : Proportion of Males by Age for Nervousness

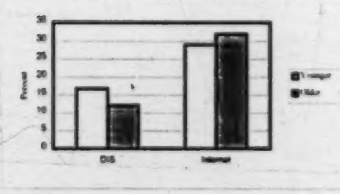
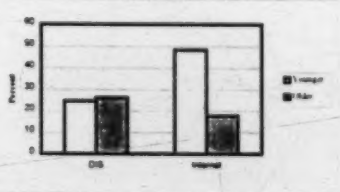


Figure 7: Proportion of Females by Age for Nervousness



- **Time of Onset:**

Overall, 33 Internet respondents (97.1%) reported that they had felt this feeling of nervousness before they ever began using the Internet.

4.3.14. Social Support

Social support was measured by 4 questions and respondents were given a final score ranging between 0 and 4.

The Alberta mean score on the 4-point social support scale (3.75±.73) was higher (F =10.06, d.f.=1, 12221; p=.002) than the Internet sample's mean (3.53±.97). No other main effect or interaction showed statistical significance at the p<.01 level. This indicates that the Internet users experienced a lower level of social support than did the general population. The summary table for the analysis of variance (ANOVA) of derived social support scores is shown in Table 63. Table 64 contains group means.

Table 63 : Analysis of Variance for Social Support

Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
NET	5.32	1	5.32	10.06	0.002
SEX	0.08	1	0.08	0.16	0.69
AGE	0.95	1	0.95	1.79	0.18
NET* SEX	1.92	1	1.92	3.64	0.06
NET* AGE	0.15	1	0.15	0.29	0.59
SEX * AGE	0.31	1	0.31	0.59	0.44
NET * SEX * AGE	0.01	1	0.01	0.03	0.87
Error	6461.13	12221	0.53		
Total	6589.25	12228			

- R Squared = .019 (Adjusted R Squared = .019)

Table 64: Social Support Means

Comparison	NPHS 1996 Sample Mean (SD)	Internet Sample Mean (SD)
NET	3.75 (.73)	3.53 (.97)
Males	3.67 (.84)	3.58 (.89)
Females	3.82 (.61)	3.48 (1.09)
Younger Ages	3.81 (.66)	3.54 (.97)
Older Ages	3.69 (.81)	3.54 (.97)
Younger Males	3.75 (.75)	3.63 (.71)
Older Males	3.57 (.95)	3.51 (1.04)
Younger Females	3.86 (.55)	3.46 (1.24)
Older Females	3.78 (.67)	3.47 (.87)

4.3.15. Non-Internet Communication

Internet users were also asked how they communicated with the person who provided different types of social support on a scale (from 4 to 16) where higher scores imply non-Internet communication methods. Table 65 shows that there was a notable difference in how people communicated based on amount of Internet use. On average, although all users were more likely to obtain support off-line (see Table 66), low Internet users were more likely to obtain social support on-line than high users (13.94 versus 12.22, respectively).

Table 65: Analysis of Variance for Non-Internet Communication

Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
HRSNET	54.008	1	54.008	5.989	.017
SEX	34.109	1	34.109	3.782	.055
AGE	9.875	1	9.875	1.095	.298
HRSNET* SEX	1.168E-02	1	1.168E-02	.001	.971
HRSNET * AGE	20.159	1	20.159	2.236	.139
SEX * AGE	6.790	1	6.790	.753	.388
HRSNET * SEX * AGE	.991	1	.991	.110	.741
Error	721.412	80	9.018		
Total	916.716	87			

- R Squared = .213 (Adjusted R Squared = .144)

Table 66: Non-Internet Communication Means Across Groups

Comparison	Lower Users' Mean (SD)	Higher Users' Mean (SD)
Overall	13.94 (2.75)	12.22 (3.40)
Males	14.65 (2.37)	12.60 (3.32)
Females	13.00 (3.02)	11.14 (3.51)
Younger Ages	13.87 (2.75)	11.16 (3.43)
Older Ages	14.26 (2.64)	13.65 (2.84)
Younger Males	14.60 (1.67)	11.32 (3.48)
Older Males	14.67 (2.61)	14.17 (2.36)
Younger Females	13.50 (3.17)	10.78 (3.46)
Older Females	12.75 (2.50)	11.80 (3.90)

4.3.16. Social Isolation

Internet respondents were asked a series of questions to assess social isolation. The final score for this item ranged from 5 to 40 where a higher score implies greater feelings of social isolation. Table 67 suggests that there was an overall notable main effect by age. Younger users were more likely to feel social isolation than older users (26.23 versus 24.43 respectively). All mean scores for different comparisons are listed in Tables 68 and 69.

Table 67: Analysis of Variance for Social Isolation

Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
HRSNET	9.336	1	9.336	.451	.503
SEX	.732	1	.732	.035	.851
AGE	119.763	1	119.763	5.785	.018
HRSNET* SEX	31.066	1	31.066	1.501	.223
HRSNET * AGE	3.467	1	3.467	.167	.683
SEX * AGE	1.953	1	1.953	.094	.759
HRSNET * SEX * AGE	.135	1	.135	.007	.936
Error	2484.266	120	20.702		
Total	2630.000	127			

Table 68: Social Isolation Means Overall

Comparison	Mean (SD)
Males	25.33 (4.29)
Females	25.48 (5.02)
Younger Ages	26.23 (4.68)
Older Ages	24.43 (4.15)
Younger Males	26.10 (4.59)
Older Males	24.48 (3.93)
Younger Females	26.41 (4.97)
Older Females	24.29 (4.81)

Table 69: Social Isolation Means Across Groups

Comparison	Lower Users' Mean (SD)	Higher Users' Mean (SD)
Overall	25.02 (4.21)	25.53 (4.79)
Males	25.28 (4.13)	25.21 (4.47)
Females	24.70 (4.37)	26.20 (5.54)
Younger Ages	26.16 (4.61)	26.27 (4.78)
Older Ages	24.12 (3.37)	24.60 (4.71)
Younger Males	26.80 (5.18)	25.86 (4.44)
Older Males	24.47 (3.34)	24.42 (4.47)
Younger Females	25.73 (4.32)	27.14 (5.65)
Older Females	23.00 (3.52)	25.00 (5.40)

4.3.17. Membership in an Organization/Association

Respondents were asked, "Are you a member of any voluntary organizations or associations such as school groups, church social groups, community centres, ethnic associations or social, civic or fraternal clubs?"

Almost five times as many people in the Internet sample were members of an organization or association than in the general population (O.R.=4.91; C.I.=2.51-9.60). Ninety-three people (68.89%) in the Internet sample had membership in an organization (see Table 71). There were significant main effects by age and gender as well with frequencies shown on Tables 72 and 73. Overall, more women than men were members in an organization (35.58% versus 32.26%, respectively) (Chi-square=15.14, d.f.=1, $p<.0001$). Also more older people than younger people had membership in an organization (36.97% versus 31.71%, respectively) (Chi-square=37.53, d.f.=1, $p<.0001$).

Table 70: Logistic regression analysis for Membership in an Organization

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
NET	1.59	4.91	2.51	9.60	21.68	0.000
Sex	0.22	1.25	1.13	1.38	18.00	0.000
Age	0.30	1.35	1.21	1.51	27.49	0.000
Sex x NET	-0.27	0.76	0.28	2.11	0.27	0.60
Age x NET	0.26	1.30	0.49	3.43	0.27	0.60
Age x Sex	-0.14	0.87	0.75	1.02	3.04	0.08
Age x Sex x NET	-0.95	0.39	0.08	1.86	1.41	0.24
Constant	-0.90	0.41			558.75	0.000

Table 71: Overall Distribution of Respondents with Membership in an Organization

Comparison	DIS Sample			Internet Sample			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
DIS vs Internet	4118	12246	33.63	93	135	68.89	73.97	<.0001

Table 72: Overall Gender Distribution of Respondents with Membership in an Organization

Comparison	Males			Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Males vs Females	1881	5831	32.26	2330	6549	35.58	15.14	<.0001

Table 73: Overall Age Distribution of Respondents with Membership in an Organization

Comparison	Younger Ages			Older Ages			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger vs Older	2220	7002	31.71	1987	5375	36.97	37.53	<.0001

4.3.18. Participation in an Organization/Association

Participants were categorized by how often they took part in activities of an association or organization on a scale from 1 (not at all) to 3 (at least once a month or week). The Internet sample's mean score on the frequency of participation scale (2.36 ±.82) was lower (F=15.346, d.f.=1,4225; p<.0001) than the Alberta mean (2.80± .46). The summary table for the analysis of variance (ANOVA) of frequency of participation scores is shown in Table 74. Table 75 contains group means.

Table 74: Analysis of Variance for Frequency of Participation

Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
NET	3.416	1	3.416	15.346	0.000
SEX	0.848	1	0.848	3.809	0.051
AGE	1.570	1	1.570	7.052	0.008
NET * SEX	1.097	1	1.097	4.929	0.026
NET * AGE	1.769	1	1.769	7.946	0.005
SEX * AGE	0.842	1	0.842	3.781	0.052
NET * SEX * AGE	0.940	1	0.940	4.225	0.040
Error	940.363	4225	0.223		
Total	967.221	4232			

Table 75: Frequency of Participation Means Across Groups

Comparison	NPHS 1996 Sample Mean (SD)	Internet Sample Mean (SD)
NET	2.80 (.46)	2.36 (.82)
Males	2.77 (.49)	2.33 (.83)
Females	2.82 (.44)	2.45 (.83)
Younger Ages	2.80 (.45)	2.25 (.83)
Older Ages	2.80 (.47)	2.47 (.81)
Younger Males	2.77 (.47)	2.14 (.86)
Older Males	2.77 (.50)	2.50 (.77)
Younger Females	2.82 (.43)	2.43 (.79)
Older Females	2.82 (.45)	2.38 (.96)

The univariate analysis of variance was significant (F=4.23, d.f.=1,4225; p=.04) for the three-way interaction of age, gender, and data source indicating that there is a relationship between Internet use and how often a person participates in an organization and that this is modulated by age and gender. Figures 8 and 9 show that while the Internet sample showed lower participation scores (meaning lower participation) regardless of gender, the gap between younger and older ages is greater for males in the Internet sample than the Alberta sample.

Figure 8: Mean Participation Scores for Males

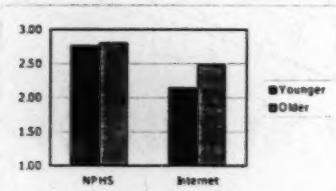
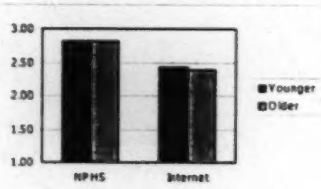


Figure 9: Mean Participation Scores for Females



For the Internet sample, younger males participated less (2.14±.86) in an organization than older males (2.50±.77). On the other hand, older females were less likely to participate in an organization (2.38±.96) than younger females (2.43±.79) in this sample. The Alberta sample showed no real mean differences between older males (2.77 ±.50) and younger males (2.77 ±.47) or between older women (2.82 ±.45) and younger women (2.82±.43).

There were no significant differences in how often a respondent participated in an organization or association by level of use within the Internet sample.

4.3.19. Helping Others

Respondents were asked, "In the past month, have you helped to care for a relative or friend with a physical, emotional, or mental health problem?"

More than twice as many respondents from the Internet sample had helped a friend or relative in the past month compared to those from the general population (O.R.=2.49; C.I.=1.29-4.82). Table 77 indicates that 56.80% of the Internet sample had helped someone. Tables 78 and 79 shows that there were main effects by age and gender as well. More women than men had helped someone (Chi-square=91.81, d.f.=1, p<.0001). Younger people reported helping someone more often than older people (Chi-square=7.65, d.f.=1, p=.006).

Table 76: Logistic regression analysis for Helping Others

Comparison	B	Odds Ratio	95% Confidence Interval		Wald	Significance
			Lower	Upper		
NET	0.91	2.49	1.29	4.82	7.39	0.007
Sex	0.36	1.44	1.30	1.59	47.17	0.000
Age	-0.20	0.82	0.72	0.93	10.29	0.001
Sex x NET	-0.46	0.63	0.24	1.70	0.83	0.36
Age x NET	0.94	2.55	1.02	6.37	4.03	0.05
Age x Sex	0.10	1.11	0.94	1.30	1.57	0.21
Age x Sex x NET	0.67	1.95	0.34	11.07	0.57	0.45
Constant	-1.03	0.36			685.74	0.000

Table 77: Overall Distribution of Respondents who Helping Others

Comparison	DIS Sample			Internet Sample			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
DIS vs Internet	3564	12202	29.21	71	125	56.80	45.30	<.0001

Table 78: Overall Gender Distribution of Respondents who Helping Others

Comparison	Males			Females			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Males vs Females	1467	5797	25.31	2167	6529	33.19	91.81	<.0001

Table 79: Overall Age Distribution of Respondents who Helping Others

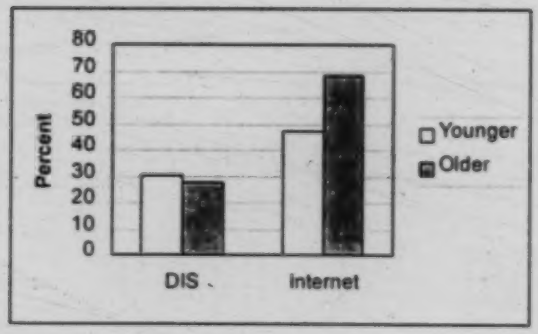
Comparison	Younger Ages			Older Ages			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger vs Older	2128	6982	30.48	1506	5343	28.19	7.65	0.006

More women than men had helped others (33.19% versus 25.31%, respectively). Also, more younger people than older people had helped a friend or relative (30.48% versus 28.19%, respectively). Table 61 and Figure 10 illustrate the 2-way interaction between age and NET (O.R.=2.55; C.I.=1.02-6.37; p=.045), which indicates that the young-old difference applied to the Internet but not to the general population.

Table 80: Distribution of Respondents who Helped Others in DIS and Internet Samples

Comparison	NPHS			Internet			Chi-Square	p-value
	N_{Cases}	N_{Total}	%	N_{Cases}	N_{Total}	%		
Younger Ages	2097	6916	30.32	31	66	46.97	8.55	0.003
Older Ages	1467	5286	27.75	39	57	68.42	46.08	<.0001

Figure 10 : Proportion of Helping Respondents by Age and NET



4.4. Demographics by Level of Internet Use

4.4.1. Occupation

This variable was grouped into three categories for chi-square analysis: part-time employment/students and homemakers, full-time employment/students, and those not employed. For occupation, the overall test of association was not significant, (Chi-square=6.34, p=0.04), indicating that there is no relationship between level of Internet use and occupational status.

Most respondents (60.0%) were classified as employed or studying full-time (see Table 82).

Table 81: Primary occupation and Time spent on-line

	Level of Use			
	Low	High	Totals	
	N=50	N=75	N	%
Part-time work/study or homemaker	28.0%	10.7%	22	17.6
Full-time work/study	54.0%	64.0%	75	60.0
Not employed	18.0%	25.3%	28	22.4

Overall, respondents tended to use the Internet for longer periods if they were employed or studying full-time (64.0%) or if they were not employed (25.3%). Conversely, those who were employed or studying part-time tended to be low users.

4.4.2. Education

For education, the overall test of association was not significant, (Chi-square=1.16, p=0.29), indicating that there is no relationship between level of Internet use and educational level.

More than half (71.2%) of the respondents stated that the highest level of education they had obtained was a university degree (see Table 83). Most of these were high users.

Table 82: Highest level of education and Time Spent on-line

	Level of Use			
	Low	High	Totals	
	N=53	N=79	N	%
Up to and including Grade 12	34.0%	25.3%	38	28.8
Trade or University Degree	66.0%	74.7%	94	71.2

4.4.3. Internet Services Used

Most respondents stated that they used the Internet for primarily two reasons, namely Web

Browsing and Email (77.3%). Only one respondent stated that time spent on-line was used for something other than either of these tasks. Again, moderate users made up the bulk of those who used these services with approximately equal numbers of high and low users.

When asked whether respondents used the Internet mostly to find information, 76.9% confirmed this was their primary purpose on-line. High users comprised most of this category (see Table 84). There was no association between level of use for the purpose of finding information (Chi-square=.53, p=.47).

Table 83: Time spent on-line for the purpose of finding information

	Level of Use					
	Low		High		Totals	
	N=49	%	N=72	%	N=121	%
Finding Information	36	73.5	57	79.2	93	76.9
Not Finding Information	13	49.0	15	20.8	28	23.1

4.5. Open-ended Responses

The 136 responses to each of the four short answer questions were content-analyzed for common motivations. This content analysis was done for all responses and then each set of common motivations was given a "theme". Then, all responses were coded as belonging to one of these emergent themes. The frequency of responses categorized for each theme will be presented. It was noted that most respondents (at least 60%) chose to leave these open-ended boxes blank, resulting in "no response".

4.5.1. Phobia Short Answer Question

"Is there anything else you were unreasonably terrified to do or be near? If so please specify."

Of those who responded to this question (N=52), 12 said that there was nothing else that unreasonably terrified them (see Table 85). The forced choice phobia category that encompassed all themes that did emerge from the respondents' answers to this question was "specific phobias". The most common response was "zoophobia" (N=16) followed by "more specific phobias" (N=9). For example, "zoophobia" included responses such as "bugs", "insects", "bees and hornets", "arachnids", "bees, wasps, and flying bugs". For the category "specific phobias", responses that were given included "having sex", "events surrounding the use of general anaesthesia", "authority, bosses", "eat fish because of the bones", and "threat of nuclear attack". The other themes that emerged from respondents' answers included "acrophobia" (N=8), "hydrophobia" (N=4),

"darkness" (N=2), and "pyrophobia" (N=1).

Table 84: Phobia Short Answer Responses

Theme	Example: Verbatim Response	N	Percent
Zoophobia	"bugs", "bees and hornets", "snakes, spiders", "dogs"	16	11.4%
Specific phobias	"events surrounding the use of general anaesthesia"	9	6.4%
Acrophobia	"heights", "edge of a tall building in a strong wind"	8	5.7%
Hydrophobia	"deep water", "swim/be near water", "water"	4	2.9%
Darkness	"the dark", "darkness"	2	1.4%
Pyrophobia	"be near fire"	1	0.7%
No or N/A	"No", "n/a"	12	8.6%
No response		88	62.9%
Total		140	

4.5.2. Phobias and the Internet

"Has the time you spent on the Internet ever been affected by any of the above [phobias]? If so, how?"

Most people who did respond to this question (N=51) said time spent on-line was not affected by phobias (N=40). For the eleven people who did respond with explanations, four themes emerged with approximately equal frequency (see Table 86). All of these themes implied that Internet provided respite by helping "avoid meetings", "meet people", "avoid a phobic event", and made respondents "more cautious" in a positive way.

Table 85: Phobias and the Internet Short Answer Responses

Theme	Example: Verbatim Response	N	Percent
To avoid meetings	"I avoid rl meets", "I don't like chat rooms, strangers"	2	1.5%
Helped meet people	"brought me out of my shell", "net was a way to get out without leaving house."	2	1.5%
More cautious	"after reviewing autopsy photos I'm more cautious when I drive", "paranoid hyper-vigilance"	2	1.5%
To avoid a phobic event	"a way to avoid the event and to pass time distracting myself"	1	0.7%
No or N/A	"No", "n/a"	40	29.4%
No response		89	65.4%
Total		136	

4.5.3. Depression and the Internet

"Has the time you spent on the Internet ever been affected by a spell of depression or these other problems?"

Of the 53 people who responded to this question, 18 personally felt that time they spent online was affected by symptoms related to depression (see Table 87). Significantly, eight people "found online support" and another four people stated that their depressive symptoms "increased Internet use". For example, "online support" explanations included statements such as "on occasion spending time online in order to feel connected and not alone", and "improved connectivity to similar interest". One person stated that depression "increases the time spent online....[because] you can at least find people to talk to." The other two themes suggested negative consequences of Internet use. Three people said that they actively tried to decrease Internet use when feeling depressed and one person used the Internet to "do even less about dealing with the real issue".

Table 86: Depression and the Internet Short Answer Responses

Theme	Example: Verbatim Response	N	Percent
Found online support	"On occasion spending time online in order to feel connected and not alone."	8	5.9%
Increased use	"increases the time spent on-line. Online you can at least find people to talk to...."	4	2.9%
Decreased use	"Sometimes I make an extra effort to leave the house, which would reduce my Internet use."	3	2.2%
To avoid issues	"I would do even less about dealing with the real issue"	2	1.5%
Other	"help me! please!"	1	0.7%
No or N/A	"No", "n/a"	35	25.7%
No response		83	61.0%
Total		136	

4.5.4. Final Comments

The last question invited participants to provide feedback: "Any thoughts you would like to share about the questions asked in this survey." A variety of themes emerged from the 50 responses to this query (see Table 88). The most common explanation given by 11 people was that depression was caused by a factor other than bereavement or the Internet. Examples of causes that respondents provided included factors such as "multiple sclerosis", "seasonal affective disorder", "job loss", "harassment", and "friendship loss". The next most common theme stated by 7 respondents was that the survey "needed more questions" on items such as mental health, Internet use, and gender identity. There were about equal numbers of responses categorized as "survey design problems", "support for the survey", and "opinions on Internet use". For this last theme, examples included respondents stating that the Internet is "not for loners", "is a useful tool", "enjoyable", and that they use the Internet "to stay in touch". "Survey design problems" were not avoidable because the problem was a broken link - a pop-up window did not always open in certain graphical environments or in the Lynx text browser.

Table 87: Final Comments Short Answer Responses

Theme	Example: Verbatim Response	N	Percent
Depression caused by another factor	"MS", "SAD", "job loss", "harassment", "friendship loss"	11	8.1%
Needed more questions	"as a psych profile, insufficient data gathered", "you could have asked about…sexual orientation", "not very many questions regarding Internet use"	7	5.1%
Survey design problems	"your 'other problems' link was almost impossible to get out of"	6	4.4%
Support for survey	"cool design….easy to follow", "Good questions", "Thanks, it made me think"	6	4.4%
Opinions on Internet	"it is my feeling that the internet is a keyhole….to gather info", "not just 'loners' that use the internet"	5	3.7%
Confused about value of survey	"I'm not sure of the value of this study"	3	2.2%
People will not divulge info on-line	"not many people would "admit", on an internet survey, to having ever attempted suicide"	2	1.5%
Other comments	"at the beginning of this year, I began taking Effexor, and that has improved the overall situation"	4	2.9%
No or N/A	"No", "n/a"	6	4.4%
No response		86	63.2%
Total		136	

4.6. Summary of Results

Table 89 shows that the Internet sample differed significantly from the general population on all but 3 variables (depression, simple phobias, and nervousness). For all variables where time of onset was asked, the disorder began before respondents began using the Internet.

Table 88: Summary of Scores and Time of Onset

Measure of Well-being	Internet Users' Score Versus General Population (high/low/no difference)	Prior to Internet use?	
		Yes/No	Mean Number of Years
Psychological Variables			
Childhood Trauma	Higher	Yes	--
Depression	No Difference	Yes	5.04
Anxiety (ever anxious)	Higher	Yes	15.83
Anxiety (3x)	Higher	--	--
Anxiety (6x)	Higher	--	--
Nervousness	No Difference	Yes	22.00
Any phobia	Higher	Yes	--
Agoraphobia	Higher	Yes	10.81
Social phobia	Higher	Yes	19.76
Simple phobia	No Difference	Yes	21.18
Hopelessness	Higher	Yes	12.94
Self-esteem	Higher	--	--
Unhappiness	Higher	--	--
Social Variables			
Social support (-)	Higher	--	--
Membership	Higher	--	--
Participation (-)	Higher	--	--
Helping others	Higher	--	--

* Based on $p<.01$ level of significance.

(-) Indicates reversal in direction.

To summarize, this table describes the Internet users' score on a number of social and psychological variables in

relation to the general population score as either higher (significantly different in the pathological direction), no difference, or lower. Note that "social support" and "participation" are "positive" in nature. For them, "higher" means lower social support and lower participation respectively. As it turns out, more of the variables showed higher scores for the Internet sample.

Chapter 5 Discussion

5.1. Discussion

This study was designed to determine the effect of Internet use on social and psychological well-being. In this study, it was hypothesized that Internet use may cause social and psychological distress. It was also argued that pre-existing factors might account for adverse health outcomes.

It was shown that Edmonton FreeNet users and Calgary Community Net users do report significantly higher levels of psychological distress than the general population. This result is consistent with findings drawn from the Carnegie-Mellon University Study (Kraut et al., 1998). The CMU study found that greater use of the Internet was associated with increases in loneliness, depression, and statistically significant declines in social involvement. However, the current study's results are not consistent with preliminary findings from a recent University of California-Los Angeles study that found non-users had reported slightly higher levels of life dissatisfaction, interaction anxiety, powerlessness, and loneliness (UCLA Center for Communication Policy, 2000).

Although a causal relationship between Internet use and psychological distress cannot be determined here, the findings suggest that Internet use itself does not result in a psychological disorder as has been previously argued (Kraut et al., 1998). The reason for this conclusion is that if using the Internet caused psychological distress, we would expect the date of onset to be after the commencement of Internet use. Since this date was well before Internet use began for over 80% of the respondents who reported a negative outcome, this indicates that psychological distress cannot be thought to be a consequence of heavy use of the Internet.

In fact, since the psychological and social difficulties under study here came first, it may well be that Internet use may result in supportive interactions. Responses to the open-ended questions, although not definitive, are in line with this view. More research on this possibility is in order.

The measures chosen for this study reflected the concepts discussed in the literature. This resulted in a set of measures where the tendency was for women to show higher rates. Disorders where males predominated, such as antisocial personality and substance abuse, were not included. As a consequence, the finding of higher rates among women may represent an artifact of the measure selection process. Nonetheless, the measures that were chosen did represent the issues that were most important in the context of this study. Given that women are more likely to report negative outcomes for all psychological variables than men, it is odd that fewer women are on-line. Perhaps, women derive on-line support in different ways than men.

In contrast to the gender disparity, the Internet sample was comparable to the general population by age. However, younger people tended to report higher levels of depression, anxiety, and trauma. As such,

it may be that younger people use the Internet for different reasons than older people.

5.2. Strengths and Limitations

Including both quantitative and short answer responses allowed for convergence on an issue using two different methods. This blended approach also allowed a greater variety of responses that may have been more difficult to obtain using only forced choice questions. For example, forced choice questions established higher prevalence rates of disorders in the Internet sample. But it was through the open-ended questions that positive effects of Internet use emerged. As such, the final data obtained were richer in the context of the findings.

There were many benefits to using questions from the NPHS and DIS surveys. Both the NPHS and DIS have strong reliability and validity and have been administered to thousands of respondents. As well, both have been used in computer-assisted interviewing (CAI) techniques. The literature also suggests that people may disclose more on a computer interview than to a real-life interviewer because of confidentiality concerns. Even so, it is interesting to note that a couple of respondents in this study noted that people may not divulge confidential information on-line in their statements on the final comments section of the survey. If in fact there were lower self-disclosure due to the data collection technique used in this study, it would only result in greater differences between the Internet sample and the general population.

Another added benefit of using questions from these surveys was that it increased overall sample size. This allowed not only overall comparisons with the general population but also allowed matching by age and gender. The larger sample size also resulted in high statistical power for comparisons. The analysis used in this study looked at multiple comparisons for each variable by age, sex, and NET. Although this has the potential to increase error rate, the level of significance was set at the more conservative 0.01 level rather than at 0.05 to minimize Type I error. Moreover, as indicated in the results section, most of the significant findings were at the p-level of .001 or better. Thus, this issue did not affect the overall results that indicated that the Internet sample had higher rates of disorder than the general population.

This study on the well-being of Internet users obviously had some limitations. First, the FreeNet sample that responded to the survey may not be representative of all FreeNet users. Since this is a design limitation, it cannot be altered in this study. However, even if those who responded were self-selected, they probably were more concerned about social psychological well-being, resulting in more complete responses. Second, Edmonton FreeNet and Calgary Community Net users may not be representative of all Internet users. Representativeness of samples raise concerns for many researchers using the Internet as a medium for data collection since those who choose to take part differ from those who do not participate. The number of contacts, personalized contacts and pre-contacts, whether in person, by phone or email, were found to be factors most associated with higher response rates in a number of Internet studies (Cook, Heath & Thompson, 2000). In the present study, although an attempt was made to obtain available demographic information on Edmonton FreeNet and Calgary CommunityNet to assess representativeness

of the sample, such data were not available. Sample bias is a serious problem with online survey research because of the self-selection involved when recruiting participants. As a result, characteristics of these respondents may not be similar to non-respondents. However, the issue of self-selection is not unlike the non-cooperation bias experienced in telephone and mail surveys since those who choose not to take part are not necessarily those who choose to participate. Even so, the analysis used in this paper was able to adjust for age and gender, thus minimizing distorted results. Nonetheless, a replication of this study on other Internet sub-populations would increase confidence in any generalizations that might be made. Third, the retrospective nature of this study may have resulted in recall bias. Particularly, this is an issue in investigating the direction of causality, based on the remembered sequence of past events, in social psychological well-being as related to Internet use. Newman and Bland (1998) have shown that recall of lifetime symptoms of depression may be unreliable if interviews are held a year or more apart. Nevertheless, it has been shown that traumatic events can be remembered accurately relative to more subjective experiences (Robins, Schoenberg, Holmes, Ratcliff, Benham, & Works, 1985). Furthermore, the subjects here were asked to recall the dates of both the onset of psychosocial events and Internet use. While the exact date might be forgotten, any bias would apply to both and it is less likely that the order would be reversed. Another source of bias is the interviewer bias resulting from the Internet survey technique used in this study. Both the NPHS and DIS used face-to-face interviewing to collect survey data but because both surveys are highly structured, they do not rely on the interviewer to assess the presence of any diagnosis. It is also noted that both surveys have been adapted for computer assisted interviewing. As such, the results from the computer interview technique used in this study are not expected to be differ greatly from those obtained from traditional face-to-face interviews.

The Internet sample had higher rates of social and psychological disorders than the general population. The evidence from this study is in favour of the conclusion that pre-existing factors explain prevalence rates of psychological distress in the Internet sample.

The findings of the study are a source of evidence for the helpfulness of the Internet. Many respondents indicated how the Internet helped them when they had experienced personal problems. Additionally, since all disorders began well before Internet use began, it is more likely that the Internet was a solace to those experiencing problems rather than a cause of these problems.

These findings are of interest to Edmonton FreeNet and Calgary Community Net as well as to the wider community who use the Internet more each day. It is significant that the findings do not support previous suppositions that the Internet may cause psychological disorders and social difficulties.

There are many directions to take this study further in future research. It would be beneficial if the study group included the whole community. This would provide more responses due to a higher sample size and eliminate self-selection that may have biased the results. It would also be helpful to do in-depth interviews using focus groups. Such a technique would allow for richer data to be collected and allow a preliminary exploration of how the Internet may be beneficial to groups of people in need.

The need for more research is quite real with Canadians leading the world in Internet use

according to a recent Price-Waterhouse study (Maclean's, 2000). As this study showed, there are many benefits to Internet technology for participants that have been overlooked in previous studies focussing on personal well-being on-line.

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Appendix A

Article from Globe and Mail (October 11, 2000).

Technology comes with a price: stress and depression

MADELAINE DROHAN

OTTAWA

The next time you are at the airport waiting to catch a flight, look around you. There will undoubtedly be several of your fellow passengers pounding away at their portable computers, talking to the office on their mobile phones, checking their e-mail or responding to their pagers.

Technology. We talk about it all the time as a perceived good. We want to attract high-technology companies to Canada. We want to keep the high-tech jobs. We think our productivity would be even better if only we had jumped on the technology bandwagon as early as the Americans.

But there is a darker side to these high-tech instruments that allow us to work no matter where we are 24 hours a day. They have become the electronic version of a ball and chain, keeping us tethered to the office and in work mode around the clock.

Not surprisingly this causes stress and depression among workers, not just in Canada but around the world. The Canadian Business and Economic Roundtable on Mental Health and the International Labour Organization have done us all a favour with their reports released in Geneva this week on the scope of the problem and its economic cost.

The roundtable report estimates that businesses in Europe and North America lose $120-billion (U.S.) a year because of stress, depression and other mental health disorders among employees. That figure includes lost productivity, increased disability insurance claims and lower performance and innovation.

E-mail and voice mail are two of the biggest sources of stress, but not the only ones, because they erase the boundaries between work and home and contribute to worker isolation in the office. How often have you heard about people sitting only yards apart sending each other e-mails? Bill Wilkerson, president of the Canadian roundtable, calls this "cubicalism" and says it contributes to mental health problems among workers.

He said in a telephone interview from Geneva yesterday that reporters at the briefing gave him a round of applause when he talked about ending e-mail enslavement. Anyone who has worked in the media realizes how technology has changed the way news is gathered and reported.

Sometimes this is for the good. We have the opportunity to be better informed on what is going on around the world because technology has given us greater reach.

But it has also ratcheted up the stress on the individual who is expected to report at any time of the day or night because technology has made this possible. The average reporter rarely has time to think about the deeper implications of a story, especially those who must also write for the Web.

This was brought home to me one year at the World Economic Forum in Davos, Switzerland, where George Soros was speaking to a small group of reporters. Mr. Soros was white-hot news at the time, having helped force the British pound out of the European Monetary System. His utterances could move markets.

The Bloomberg and Reuters reporters, who were in competition to see who could get his comments on the wire sooner, stood in front of him with tape recorders in one hand and a mobile phones in the other, relaying to their news desks snippets of what Mr. Soros was saying. The pressure on the reporters was enormous. But because technology had made it possible, they had to transmit Mr. Soros's words the moment they left his lips.

Technology has also allowed news organizations to tell the journalistic version of little white lies. One television colleague of mine quit in disgust after being asked one too many times to do what is known as a voice-over to go with television pictures shot earlier in the day of places she had never been to and people she had never met. For people who care about their work, this is a source of great stress.

Every occupation has equivalent examples of where technology has become a burden rather than a tool. The reports released in Geneva are telling employers and employees that they have to redraw the lines.

Boundaries have to be re-established between home and work. Business has to introduce new protocols to deal with office e-mails to make them less intrusive and overwhelming for the recipient. The software industry needs to design e-mail systems that can refuse to accept e-mails.

But the key message here is that managers must realize that pushing humans beyond their limits just because it is technically possible to do so carries huge economic costs. And that, in the end, will be reflected on their bottom line.

Readers can send e-mail to mdrohan@globeandmail.ca

Appendix B: QUESTIONNAIRE

Demographic Questions: Please tell us about you.

1. Are you: *(radio button)*

   Male
   Female

2. How old are you? *(text-box)*

3. What is your current marital status? *(pop-up window)*

   (Please choose ONE)
   Married or living together as married
   Widowed
   Separated
   Divorced
   Never married

4. If you have children, are you currently living with any of them? *(pop-up window)*

   Have no children.
   Yes
   No

5. Are you currently a: *(pop-up window)*

   (select your primary occupation)
   Part-Time Student
   Full-Time Student
   Employed Full-Time
   Employed Part-Time

Not Employed
Homemaker

6. What is the HIGHEST level of education that you have obtained: *(check-boxes)*

Less than Grade 12.
Grade 12 (High School Diploma)
Trade/Technical Diploma or Certificate
University or College Degree

Computer Usage Questions: Tell us about your internet use.

1. Which 2 internet services do you use MOST often? *(check-boxes)*

(Check TWO only)
WWW Browsing (mostly Surfing).
Email.
FTP (File Transfer Protocol).
Chat Sessions (Internet Relay Chat).
Newsgroup/Usenet.
Gopher.
Other eg. MUDs.

a) Do you use the Internet mostly fo find information? *(pop-up window)*

Please choose one.
Yes
No

2. In what year did you first start using the internet REGULARLY (i.e. at least once every few days)? *(text-box)*

3. a) On average, how many days per week do you connect to the internet? *(pop-up window)*

Please choose one.

Less than one.

1-2

2-4

4-6

Usually every day.

b) On days that you connect, about how many hours do you use the internet? *(pop-up window)*

Please choose one.

Less than 1 hour.

More than 1 but less than 2 hours.

More than 2 but less than 5 hours.

Over 5 hours.

4. How much do you AGREE with the following statements? *(radio boxes for scale)*

Strongly Disagree

Disagree

Neutral

Agree

Strongly Agree

a) Sometimes I feel all alone in this world.

b) I don't get invited out by friends as often as I would like.

c) Most people today seldom feel lonely.

d) Real friends are easy as ever to find.

e) One can always find friends if he/she shows him/herself to be friendly.

f) The world in which we live is basically a friendly place.

g) There are few dependable ties between people anymore.

h) People are just naturally friendly and helpful.

i) I don't get to visit friends as often as I'd really like.

Social Support Questions: Now, a few questions about your contact with different groups and support from family and friends.

1. Are you a member of any voluntary organizations or associations such as school groups, church social groups, community centres, ethnic associations or social, civic or fraternal clubs? *(radio button)*

Yes
No

2. How often djd you participate in meetings or activities of these groups in the past 12 months? If you belong to many, just think of the ones in which you are most active. *(pop-up window)*

Please choose one.
At least once a week
At least once a month
At least 3 or 4 times a year
At least once a year
Not at all

3. Do you have someone you can confide in or talk to about your private feelings or concerns? *(radio button)*

Yes
No (go to Question 4)

a) The main way you communicate with this person is: *(pop-up window)*

Please choose one.
Always on the Internet.
Occasionally on the Internet.
Hardly ever on the Internet.
Never on the Internet.

4. Do you have someone you can really count on to help you out in a crisis situation? *(radio button)*

Yes
No (go to question 5)

a) The main way you communicate with this person is: *(pop-up window)*

Please choose one.
Always on the Internet.
Occasionally on the Internet.
Hardly ever on the Internet.
Never on the Internet.

5. Do you have someone you can really count on to give you advice when you are making personal decisions? *(radio button)*

Yes
No (go to question 6)

a) The main way you communicate with this person is: *(pop-up window)*

Please choose one.
Always on the Internet.
Occasionally on the Internet.
Hardly ever on the Internet.
Never on the Internet.

6. Do you have someone who makes you feel loved and cared for? *(radio button)*

Yes
No (go to question 7)

a) The main way you communicate with this person is: *(pop-up window)*

Please choose one.
Always on the Internet.
Occasionally on the Internet.
Hardly ever on the Internet.
Never on the Internet.

7. In the past month, have you HELPED TO CARE for a relative or friend with a physical, emotional, or mental health problem? *(radio button)*

Yes
No

Well-being Questions:

1. How much do you AGREE with the following statements? *(radio button for scale)*

Strongly Disagree
Disagree
Neither Agree nor Disagree
Agree
Strongly Agree

a) You take a positive attitude toward yourself.
b) On the whole you are satisfied with yourself.
c) All in all, you're inclined to feel you're a failure.
d) Your feel that you have a number of good qualities.
e) You feel that you are a person of at least equal worth to others.
f) You are able to do things as well as most people.

2. Would you describe yourself as being USUALLY: *(pop-up window)*

Please choose one.

Happy and interested in life.
Somewhat happy.
Somewhat unhappy.
Unhappy with little interest in life.
So unhappy that life is not worthwhile.

Childhood and adult stressors: The next few questions ask about some things that may have happened to you while you were a child or a teenager, before you moved out of the house.

1. Did you spend 2 weeks or more in the hospital? *(radio button)*

Yes
No

2. Did your parents get a divorce? *(radio button)*

Yes
No

3. Did your father or mother not have a job for a long time when they wanted to be working? *(radio button)*

Yes
No

4. Did something happen that scared you so much that you thought about it for years after? *(radio button)*

Yes
No

5. Were you sent away from home because you did something wrong? *(radio button)*

Yes
No

6. Did either of your parents drink or use drugs so often that it caused problems for the family? *(radio button)*

Yes
No

7. Were you ever physically abused by someone close to you? *(radio button)*

Yes
No

Questions on Emotion: Next, a few questions about your feelings.

1. Has there ever been a period of time when you felt that life was HOPELESS? *(radio button)*

Yes
No (go to question 2)

a) If so, at what age did this feeling begin? *(text-box)*

b) How recently have you had a spell like this? *(pop-up window)*

Please choose one.
Within last 2 weeks or currently.
Within last month.
Within last 6 months.
Within last year.
More than an year ago.

c) If more than 1 year ago, please specify age: *(text-box)*

2. Have you ever considered yourself a nervous person? *(radio button)*

Yes
No (go to question 3)

a) If so, at what age did this nervousness begin? *(text-box)*

3. Have you ever had a spell or attack when all of a sudden you felt frightened, anxious or very uneasy in situations when most people would not be afraid? *(radio button)*

Yes
No (go to Next Page)

a) If so, how old were you the FIRST time you had one of these sudden spells of feeling frightened or anxious? *(text-box)*

b) Have you ever had 3 spells like this close together - say within a 3-week period? *(radio button)*

Yes
No

c) Have spells like this occurred during at least 6 DIFFERENT weeks in your life? *(radio button)*

Yes
No

d) How recently have you had a spell like this? *(pop-up window)*

Please choose one.
Within last 2 weeks or currently.
Within last month.
Within last 6 months.
Within last year.
More than an year ago.

e) If more than 1 year ago, please specify age: *(text-box)*

4. Some people have phobias, that is, such a strong fear of something or some situation that they try to avoid it, even though they know there is no real danger. Have you ever had such an UNREASONABLE fear of any of the following that you tried to avoid it/them?

If yes, how old were you the FIRST TIME you were bothered by ANY of these fears?

(Please give your best estimate)

	No	Yes	If yes, how old were you?
	(radio button)		*(text-box)*
a) Being in a crowd			
b) Being on any kind of public transportation eg. plane, bus, elevator			
c) Going out of the house alone			
d) Being in a closed space			
e) Being alone			
f) Speaking in front of a small group of people you know			
g) Speaking to strangers or meeting new people			

h) Is there anything else you were unreasonably terrified to do or be near? Please specify: *(text-box)*

i) Has the time you spent on the Internet ever been affected by any of the above? If so how? *(text-box)*

5. How recently have any of these fears been so strong that you tried to avoid the situation: *(pop-up window)*

Please choose one.
Within last 2 weeks or currently.
Within last month.
Within last 6 months.
Within last year.
More than an year ago.
Not Applicable.

a) If more than 1 year ago, please specify age: *(text-box)*

6. In your lifetime, have you ever had TWO WEEKS or more during which you felt sad, blue, depressed, or when you lost all interest and pleasure in things that you usually cared about or enjoyed? *(radio button)*

Yes
No (Go to Next Page)

a) Have you had TWO YEARS or more in your life when you felt depressed or sad almost all the time, even if you felt okay sometimes?

Yes
No

b) How old were you the FIRST TIME you had a spell for TWO WEEKS or more when you felt sad, blue or depressed?

Please specify age: *(text-box)*

8. Has there ever been a period of TWO WEEKS or longer when any of the following occurred?

If yes, how old were you the first time it happened?

(Please give your best estimate.)

	No	Yes	If yes, how old were you?
	(radio button)		*(text-box)*
a) You lost your appetite?			
b) You lost as much as 10 pounds without trying to?			
c) Your eating increased so much that you gained as much as 10 pounds?			
d) You had trouble falling asleep, staying asleep, or waking up too early?			
e) You were sleeping too much?			
f) You felt tired out all the time?			
g) You talked or moved more slowly than is normal for you?			
h) You had to be moving all the time ie. you couldn't sit still?			
i) Your interest in sex was a lot less than usual?			
j) You felt worthless, sinful, or guilty?			
k) You had a lot more trouble concentrating than is normal for you?			
l) Your thoughts came much slower than usual or seemed mixed up?			
m) You thought a lot about death - either your own, someone else's or death in general?			
n) You felt like you wanted to die?			
o) You felt so low you thought of committing suicide?			
p) You ever made definite plans to commit suicide?			
q) You ever attempted suicide?			

8. Did any of these spells occur just after someone close to you died? *(pop-up window)*

Please choose one.
Yes
No
Not applicable

9. Has the time you spent on the Internet ever been affected by a spell of depression or these <u>other problems</u>?

If so, how? *(text-box)*

10. Have you had any spell of depression ALONG WITH these <u>other problems</u> at times when it wasn't due to a death? *(pop-up window)*

Please choose one.
Yes
No (go to next page)
Not Applicable (go to next page)

11. When did your LAST spell like that end? *(pop-up window)*

Please choose one.
Not Applicable.
Within last two weeks.
Within last month.
Within last 6 months.
Within last year.
More than an year ago.

a) If more than 1 year ago, please specify age: *(text-box)*

Final Thoughts. Do you have any thoughts you would like to share about the questions asked in this survey?

(Please type comments below.) *(text-box)*

After clicking submit button, the following message appears on the Web page.:

Thank you for completing our survey!

Your participation is very important for understanding the social and psychological implications of Internet Use.

Watch for the results of this survey on FreeNet's home page.

Click on the link below to return to Edmonton (or Calgary) FreeNet's home page.

Appendix C: CODEBOOK

Each question number in the codebook is preceded by a letter indicating the section of the survey it came from as follows:

D=Demographic Question
CU=Computer Usage Question
SS=Social Support Question
W=Well-being Question
CA=Childhood and Adult Stressor Question
E=Emotion Question

Question Number	Variable Description	Variable Name	Value Label
location	Edmonton or Calgary	location	1=Edmonton 2=Calgary
D1	Gender	gencode	1=Male 2=Female 9=No response
D2	Year of birth	age	Self-coding
D3	Marital status	margrpd	1=Living as married 2=Single 3=Widowed or Divorced or Separated 9=No response

D4	Living with kids	nu_child	0=Have no children 1=Yes 2=Yes, but not living with them 9=No response
D5	Primary occupation	occupati	1=Part-time student 2=Full-time student 3=Employed full-time 4=Employed part-time 5=Not employed 6=Homemaker 9=No response
D6	Education	edcode	1=Less than Grade 12 2=Grade 12 (Diploma) 3=Trade/Tech Diploma 4=University/College Degree 9=No response
CU1	Internet services	intserv1 intserv2	1=WWW Browsing 2=Email 3=FTP 4=Chat sessions (IRC) 5=Newsgroups/Usenet 6=Gopher 7=Other eg. MUDs 9=No response
CU1a	Internet used to find info	info_fin	1=Yes 2=No 9=No response

CU2	First year used Internet	first_ye	Self-coding
CU3a	Days Per Week on-line	days_per	1=Less than 1 day 2=1 to 2 days 3=2 to 4 days 4=4 to 6 days 5=Usually every day 9=No response
CU3b	Hours Per Day on-line	hours_pe	1=Less than 1 2=Over 1 but under 2 3=Over 2 but under 5 4=Over 5 hours 9=No response
Net Hours	Total number of hours online per week (Grouped variable)	hrsnet	1=If total hours per day is under 1 **or** if online for less than 2 days per week 2=If online for 1-2 hours at least 2 days **or** if online for 2-4 hours for 2-4 days/wk 3=If online for over 2 hours each day for over 4 days per week 9=No response
CU4a	Social Isolation question #1	slonscale	1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree

			5=Strongly Agree
CU4b	Social Isolation question #2	invscale	1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree
CU4c	Social Isolation question #3	slonscal	1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree
CU4d	Social Isolation question #4	efrscale	1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree
CU4e	Social Isolation question #5	afrscale	1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree
CU4f	Social Isolation question #6	wrlscale	1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree

CU4g	Social Isolation question #7	tiescale	1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree
CU4h	Social Isolation question #8	nahscale	1=Strongly Agree 2=Agree 3=Neutral 4=Disagree 5=Strongly Disagree
CU4i	Social Isolation question #9	visscale	1=Strongly Disagree 2=Disagree 3=Neutral 4=Agree 5=Strongly Agree
Social Isolation	Social Isolation Scale (Sum of CU4a to CU4i)	siswhole	Summation value (min=9; max=45) 99=No response
SS1	Volunteer member	volcode	1=Yes 2=No 9=No response
SS2	Frequency of volunteering	freq_vol	1=At least once a week 2=Once a month 3=3 or 4 times a year 4=At least once a year 5=Not at all

			9=No response
SS3	Can confide in someone	confcode	0=No 1=Yes
SS3a	Mode of communicating with confidante	mode1	1=Always on-line 2=Occasionally on-line 3=Hardly ever on-line 4=Never on-line 9=No response
SS4	Can count on someone to help in crisis situation	cricode	0=No 1=Yes
SS4a	Mode of communicating with crisis helper	mode2	1=Always on-line 2=Occasionally on-line 3=Hardly ever on-line 4=Never on-line 9=No response
SS5	Can count on someone to give advice	advcode	0=No 1=Yes
SS5a	Mode of communicating with advisor	mode3	1=Always on-line 2=Occasionally on-line 3=Hardly ever on-line

			4=Never on-line 9=No response
SS6	Have someone who makes you feel loved and cared for	lovcode	0=No 1=Yes
SS6a	Mode of communicating with person who cares	mode4	1=Always on-line 2=Occasionally on-line 3=Hardly ever on-line 4=Never on-line 9=No response
Social Support Index	Social Support (sum of SS3 to SS6)	ssindex	Summation variable (min=0; max=4) 9=No response
SS7	Have you helped to care for someone in past month	helpcode	1=Yes 2=No 9=No response
W1a	Self-esteem question #1	poscode	0=Strongly Disagree 1=Disagree 2=Neutral 3=Agree 4=Strongly Agree
W1b	Self-esteem question #2	satcode	0=Strongly Disagree 1=Disagree

			2=Neutral 3=Agree 4=Strongly Agree
W1c	Self-esteem question #3	failcode	0=Strongly Agree 1=Agree 2=Neutral 3=Disagree 4=Strongly Disagree
W1d	Self-esteem question #4	goodcode	0=Strongly Disagree 1=Disagree 2=Neutral 3=Agree 4=Strongly Agree
W1e	Self-esteem question #5	eqcode	0=Strongly Disagree 1=Disagree 2=Neutral 3=Agree 4=Strongly Agree
W1f	Self-esteem question #6	dwlcode	0=Strongly Disagree 1=Disagree 2=Neutral 3=Agree 4=Strongly Agree
Self-Esteem Index	Self-esteem (sum of W1a to W1f)	estindex	Summation variable (min=0; max=24) 99=No response

W2	Unhappiness Scale	degree_o	1=Happy and interested 2=Somewhat happy 3=Somewhat unhappy 4=Unhappy with little interest in life 5=So unhappy that life is not worthwhile 9=No response
CASa	Stressor question #1	hospcode	0=No 1=Yes
CASb	Stressor question #2	divcode	0=No 1=Yes
CASc	Stressor question #3	njobcode	0=No 1=Yes
CASd	Stressor question #4	scarcode	0=No 1=Yes
CASe	Stressor question #5	sentcode	0=No 1=Yes
CASf	Stressor question #6	drkcode	0=No 1=Yes
CASg	Stressor question #7	abucode	0=No 1=Yes

Stress Index	Stress Index (sum of CASa to CASg)	trmindex	Summation variable (min=0; max=7) 9=No response
E1	Ever hopeless	qevr_hop	1=Yes 2=No 9=No response
E1a	Age hopelessness began	age_hope	Self-coding
E1b	Recent hopelessness	rec_hope	1=Within last 2 weeks or currently 2=Within last month 3=Within last 6 mths 4=Within last year 5=More than an year ago 8=Not applicable 9=No response
E1c	Age if hopeless over an year ago	long_hop	Self-coding
E2	Ever nervous	qev_nerv	1=Yes 2=No 9=No response
E2a	Age nervousness began	age_nerv	Self-coding

E3	Ever anxious	qev_anx	1=Yes 2=No 9=No response
E3a	Age anxiousness began	age_anxi	Self-coding
E3b	Ever 3 anxious spells	qthree_a	1=Yes 2=No 8=Not applicable 9=No response
E3c	Anxious for 6 different weeks in life	qmany_an	1=Yes 2=No 8=Not applicable 9=No response
E3d	Recent anxiousness	rec_anx	1=Within last 2 weeks or currently 2=Within last month 3=Within last 6 months 4=Within last year 5=More than an year ago 8=Not applicable 9=No response
E3e	Age if anxious over an year ago	long_anx	Self-coding
E4a	Phobia question (crowds)	qcrowds	1=Yes

			2=No 9=No response
E4b	Phobia question (transportation)	qpubtran	1=Yes 2=No 9=No response
E4c	Phobia question (going out)	qlvhome	1=Yes 2=No 9=No response
E4d	Phobia question (closed spaces)	qclospac	1=Yes 2=No 9=No response
E4e	Phobia question (being alone)	qbealone	1=Yes 2=No 9=No response
E4f	Phobia question (Speaking in small groups)	qspkfron	1=Yes 2=No 9=No response
E4g	Phobia question (Speaking to strangers)	qspkstra	1=Yes 2=No 9=No response
E4h	Phobia question (other phobias)	othphob1	1=Other

		othphob2	2=No or N/A
		othphob3	3=Acrophobia (heights)
			4=Zoophobia
			(animals, insects)
			5=Hydrophobia
			(water, lakes)
			6=Astraphobia (storms)
			7=Pyrophobia (fire)
			8=Darkness
			99=No response
E4i	How internet affects phobias	trauma_t	1=No or N/A
			2=To avoid meetings
			(real life or online)
			3=Helped meet people
			4=Other
			9=No response
E5	Recently phobic	avoidanc	1=Within last 2 weeks
			or currently
			2=Within last month
			3=Within last 6 months
			4=Within last year
			5=More than an year ago
			6=Not applicable
			99=No response
E5a	Age if last phobic over		
	an year ago	qavoidan	Self-coding
E6	Ever two weeks of sadness	qevr_dpr	1=Yes
			2=No
			9=No response

E6a	Ever two years of sadness	qlong_dp	1=Yes 2=No 8=Not applicable 9=No response
E6b	First age of having two weeks of sadness	qfirst_s	Self-coding
E7a	Depression question (appetite loss)	qappet	1=Yes 2=No 9=No response
E7a (age)	Depression question (first age of appetite loss)	f_appet	Self-coding
E7b	Depression question (losing weight)	qlose_pd	1=Yes 2=No 9=No response
E7b (age)	Depression question (losing weight)	f_losepd	Self-coding
E7c	Depression question (gained weight)	qgain_pd	1=Yes 2=No 9=No response

E7c (age)	Depression question (gained weight)	f_gainpd	Self-coding
E7d	Depression question (little sleep)	qlit_slp	1=Yes 2=No 9=No response
E7d (age)	Depression question (little sleep)	f_litslp	Self-coding
E7e	Depression question (too much sleep)	qmuc_slp	1=Yes 2=No 9=No response
E7e (age)	Depression question (too much sleep)	f_mucslp	Self-coding
E7f	Depression question (tiredness)	qtired	1=Yes 2=No 9=No response
E7f (age)	Depression question (tiredness)	f_tired	Self-coding
E7g	Depression question (lethargic)	qletharg	1=Yes 2=No 9=No response

E7g (age)	Depression question (lethargic)	f_lethar	Self-coding
E7h	Depression question (hyperactive)	qhyperac	1=Yes 2=No 9=No response
E7h (age)	Depression question (hyperactive)	f_hyper	Self-coding
E7i	Depression question (low sexual interest)	qlowsex	1=Yes 2=No 9=No response
E7i (age)	Depression question (low sexual interest)	f_lwsex	Self-coding
E7j	Depression question (worthlessness)	qwrthles	1=Yes 2=No 9=No response
E7j (age)	Depression question (worthlessness)	f_wrthls	Self-coding
E7k	Depression question		

	(trouble concentrating)	qconcent	1=Yes 2=No 9=No response
E7k (age)	Depression question (trouble concentrating)	f_concn	Self-coding
E7l	Depression question (confused thoughts)	qconfuse	1=Yes 2=No 9=No response
E7l (age)	Depression question (confused thoughts)	f_confus	Self-coding
E7m	Depression question (thoughts of death)	qdeath	1=Yes 2=No 9=No response
E7m (age)	Depression question (thoughts of death)	f_death	Self-coding
E7n	Depression question (wished to die)	qdying	1=Yes 2=No 9=No response
E7n (age)	Depression question (wished to die)	f_dying	Self-coding

E7o	Depression question (thought of suicide)	qthsuic	1=Yes 2=No 9=No response
E7o (age)	Depression question (thought of suicide)	f_thsuic	Self-coding
E7p	Depression question (planned suicide)	qplsuic	1=Yes 2=No 9=No response
E7p (age)	Depression question (planned suicide)	f_plsuic	Self-coding
E7q	Depression question (attempted suicide)	qatsuic	1=Yes 2=No 9=No response
E7q (age)	Depression question (attempted suicide)	f_atsuic	Self-coding
E8	Depression due to death	dep_dth	1=Yes 2=No 3=Not Applicable 9=No response

E9	How Internet affects depression	dep_time	1=No or N/A 2=Increased Internet use when depressed 3=Decreased Internet use when depressed 4=Found on-line support when depressed (more time online) (i.e. friends, information) 5=Used Internet to avoid dealing with real issues 6=Other 9=No response
E10	Depression not due to death	dep_ndth	1=Yes 2=No 3=Not Applicable 9=No response
E11	Recently depressed when not due to a death	dep_16	1=Not Applicable 2=Within last 2 weeks 3=Within last month 4=Within last 6 months 5=Within last year 6=More than an year ago 9=No response
E11a	Age if depressed over an year ago	long_dep	Self-coding

Final Thoughts	Any further comments	final_co	11=Opinions on net use eg. not "loners", to stay in touch, useful tool, enjoy Internet use 12=Survey design problems eg."other problems"link, want more choices for answers, too many negative questions 13=Needed more questions eg.mental health, Internet use, gender 14=Confused about value of survey 15=Support for survey eg. Good design, good questions, thoughtful survey 16=Concern that people will not divulge info online 17=Depression caused by another factor eg.MS, SAD, job loss, harassment, friendship loss 18=No or No comment 19=Other 99=No response

Appendix D: RECRUITMENT MESSAGE

(for Edmonton FreeNet)

Internet Use: Social and Psychological Well-being

My name is Mary Modayil. I am a graduate student in the Department of Public Health Sciences at the University of Alberta and a FreeNet member. In partnership with FreeNet, I am conducting an online survey of the relationship between Internet use and social and personal factors. The purpose of the questionnaire is to determine the extent to which variations in social and psychological factors covary with time spent on-line.

I would like to invite the Edmonton FreeNet community to participate in order to enhance the understanding of our involvement in community networks. By completing the survey, you are making a difference. I think that you will find it interesting, and a summary of the results will be posted on the FreeNet website when the study is completed.

All FreeNet account holders will be entered in a draw for a free one-year FreeNet membership.

If you would like to check it out, please go to:

http://www.ualberta.ca/~mmodayil/Information_Page.htm

Or check out the What's New section (U of A research project) on Edmonton FreeNet's home page.

Thank you very much for your help.

Sincerely,

Mary Modayil
mmodayil@gpu.srv.ualberta.ca

Appendix E: INFORMATION LETTER

(For Edmonton FreeNet)

To Begin Survey, please scroll down to bottom of this page and click "Start"....

Purpose of the Study:

The purpose of the questionnaire is to explore how internet use may be related to social support, and the social and psychological well-being of people who use the internet.

Background and Procedures:

The questionnaire should take less than 15 minutes to complete. You are welcome to include as many comments (at end of questionnaire) on the questions as you choose.

The nature of the questions you will be asked to answer include:

demographic questions: to allow data to be categorized
computer use questions: to measure internet use
social support questions: to determine how the internet affects social support
questions on well-being: to reflect feel general happiness
childhood and adult stressors: the past may influence the present
questions on emotion: to determine levels in internet users

Please feel free to print or save to disk a copy of this information letter.

Benefits and Risks:

The findings from this study will help us understand the links between Internet use and social and personal factors. The findings from this study will be made available through Edmonton FreeNet.

All FreeNet account holders will be entered in a draw for a free one-year FreeNet membership.

Any psychological concerns resulting from taking part in this study are very small. It is similar to completing any online survey (see Confidentiality section).

However, if personal concerns arise after completing the survey, we recommend that you contact:

a health professional
or the Edmonton Mental Health Clinic (427-4444)
or the Crisis Line (482-HELP / 482-4357)

You may wish to print a copy of your own questionnaire to help your health professional.

Confidentiality:

If you leave your computer during the questionnaire, please remember to exit the Survey Web site, close your browser, or turn off your computer. If you share your home computer with others at home, you may wish to clear your disk cache after completing the survey. If you need help doing this, please open this page.

Your participation and responses will be completely confidential once we receive them but there are limits to sending information over the Internet. If you have any concerns, please email me.

The names of participants will not be collected. Only the principal investigator and co-investigator (see below) will have the right to use the data collected which will be kept in a locked cabinet and electronic data file. All data collected will be kept for at least seven years (University of Alberta Policy). If any further analysis is conducted with the study, further ethics approval will be sought first.

Freedom to Withdraw:

Please understand that your participation is voluntary and you are free to discontinue participation at any time. You have the right to refuse to answer any question. By completing and sending in the questionnaire, you are agreeing to participate.

Investigators:

This study is being done under the sponsorship of the University of Alberta. This project has been reviewed by the Health Research Ethics Board, which makes sure that research projects observe the University of Alberta Standards for the Protection of Human Research Participants and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.

If you have any concerns about any aspect of this study, and would like to speak to someone at the University who is not involved in the study, please contact:

Felicity Hey
Graduate Programs Administrator
Department of Public Health Sciences
Clinical Sciences Bldg 13-103G
University of Alberta

Ph: (780) 492-6407
email: felicity.hey@ualberta.ca

If you want more information before deciding, please contact Mary Modayil (principal investigator; mmodayil@ualberta.ca or phone 492-4220) or Dr. Gus Thompson

(supervisor; gus.thompson@ualberta.ca or 492-8753).

Principal Investigator:

Mary Modayil
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Start Survey Graphic Link **Edmonton FreeNet Graphic Link**

Appendix F: INFORMATION LETTER

(For Calgary Community Net)

To Begin Survey, please scroll down to bottom of this page and click "Start"....

Purpose of the Study:

The purpose of the questionnaire is to explore how internet use may be related to social support, and the social and psychological well-being of people who use the internet.

Background and Procedures:

The questionnaire should take less than 15 minutes to complete. You are welcome to include as many comments (at end of questionnaire) on the questions as you choose.

The nature of the questions you will be asked to answer include:

demographic questions: to allow data to be categorized
computer use questions: to measure internet use
social support questions: to determine how the internet affects social support
questions on well-being: to reflect feel general happiness
childhood and adult stressors: the past may influence the present
questions on emotion: to determine levels in internet users

Please feel free to print or save to disk a copy of this information letter.

Benefits and Risks:

The findings from this study will help us understand the links between Internet use and social and personal factors. The findings from this study will be made available through Edmonton FreeNet.

All FreeNet account holders will be entered in a draw for a free one-year FreeNet membership.

Any psychological concerns resulting from taking part in this study are very small. It is similar to completing any online survey (see Confidentiality section).

However, if personal concerns arise after completing the survey, we recommend that you contact:

a health professional
or the Crisis Line (266-1605)

You may wish to print a copy of your own questionnaire to help your health professional.

Confidentiality:

If you leave your computer during the questionnaire, please remember to exit the Survey Web site, close your browser, or turn off your computer. If you share your home computer with others at home, you may wish to clear your disk cache after completing the survey. If you need help doing this, please open this page.

Your participation and responses will be completely confidential once we receive them but there are limits to sending information over the Internet. If you have any concerns, please email me.

The names of participants will not be collected. Only the principal investigator and co-investigator (see below) will have the right to use the data collected which will be kept in a locked cabinet and electronic data file. All data collected will be

kept for at least seven years (University of Alberta Policy). If any further analysis is conducted with the study, further ethics approval will be sought first.

Freedom to Withdraw:

Please understand that your participation is voluntary and you are free to discontinue participation at any time. You have the right to refuse to answer any question. By completing and sending in the questionnaire, you are agreeing to participate.

Investigators:

This study is being done under the sponsorship of the University of Alberta. This project has been reviewed by the Health Research Ethics Board, which makes sure that research projects observe the University of Alberta Standards for the Protection of Human Research Participants and the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans.

If you have any concerns about any aspect of this study, and would like to speak to someone at the University who is not involved in the study, please contact:

Felicity Hey
Graduate Programs Administrator
Department of Public Health Sciences
Clinical Sciences Bldg 13-103G
University of Alberta

Ph: (780) 492-6407
email: felicity.hey@ualberta.ca

If you want more information before deciding, please contact Mary Modayil (principal investigator; mmodayil@ualberta.ca or phone 492-4220) or Dr. Gus Thompson (supervisor; gus.thompson@ualberta.ca or 492-8753).

Principal Investigator:

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Start Survey Graphic Link

Calgary Community Net Graphic Link

Appendix G: OVERALL COMPARISONS

(Within Internet Sample)

Table G1

Within Internet Comparisons For All Continuous Variables: (overall HRSNET)

Variable	Type of Variable	Lower Users' Mean (SD)	Higher Users' Mean (SD)	F-ratio	p-value
Participation	NPHS 96	2.51 (.79)	2.26 (.84)	.004	.95
Social Support	NPHS 96	3.52 (1.01)	3.52 (.95)	.706	.40
Self-esteem	NPHS 94	17.98 (3.81)	18.69 (4.22)	1.634	.20
Unhappiness	NPHS 94	1.52 (.83)	1.60 (.86)	3.594	.06
Stressors	NPHS 94	1.42 (1.42)	1.62 (1.57)	2.501	.12
Non-Internet Communication	Internet	13.94 (2.75)	12.22 (3.40)	1.131	.29
Social Isolation	Internet	25.02 (4.21)	25.53 (4.79)	.287	.59

Table G2

Within Internet Comparisons For All Categorical Variables: (overall HRSNET)

Variable	Type of Variable	Lower Users		Higher Users		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	75.47	40	84.81	67	1.802	.18
Anxiety (Ever)	DIS	36.54	19	39.74	31	.034	.71
Anxiety (3X)	DIS	24.53	13	25.32	20	.011	.92
Anxiety (6X)	DIS	31.37	16	23.38	18	1.006	.32
Any Phobia	DIS	54.90	28	40.26	31	2.647	.10
Agoraphobia	DIS	28.00	14	25.00	19	.140	.71
Social Phobia	DIS	39.22	20	29.87	23	1.201	.27
Simple Phobia	DIS	23.53	12	14.29	11	1.778	.18
Hopelessness	DIS	42.31	22	46.15	36	.187	.67
Nervousness	DIS	34.62	18	32.05	25	.093	.76
Membership	NPHS	71.70	38	65.82	52	.505	.48
Helping	NPHS	42.86	21	65.33	49	6.090	.01

Table G3

Means for Gender x HRSNET (Continuous Variables)

Variable	Type of Variable	Lower Users' Mean (SD)		Higher Users' Mean (SD)		F-ratio	p-value
		Males	Females	Males	Females		
Participation	NPHS 96	2.37 (.84)	2.72 (.67)	2.29 (.83)	2.20 (.89)	.028	.87
Social Support	NPHS 96	3.50 (.97)	3.55 (1.10)	3.60 (.87)	3.42 (1.10)	.943	.33
Self-esteem	NPHS 94	18.28 (3.48)	17.61 (4.23)	19.04 (3.97)	17.88 (4.75)	0.981	.32
Unhappiness	NPHS 94	1.50 (.86)	1.55 (.80)	1.56 (.80)	1.68 (.99)	1.544	.22
Stressors	NPHS 94	.97 (1.10)	2.00 (1.60)	1.42 (1.59)	1.96 (1.51)	1.808	.18
Non-Internet Communication	Internet	14.65 (2.37)	13.00 (3.02)	12.60 (3.32)	11.14 (3.51)	.114	.74
Social Isolation	Internet	25.28 (4.13)	24.70 (4.37)	25.21 (4.47)	26.20 (5.54)	.233	.63

Table G4

Means for Age X HRSNET (Continuous Variables)

Variable	Type of Variable	Lower Users' Mean (SD)		Higher Users' Mean (SD)		F-ratio	p-value
		Younger	Older	Younger	Older		
Participation	NPHS 96	2.38 (.92)	2.59 (.67)	2.17 (.78)	2.37 (.91)	.214	.65
Social Support	NPHS 96	3.57 (.95)	3.46 (1.10)	3.52 (.99)	3.51 (.92)	.590	.44
Self-esteem	NPHS 94	17.08 (4.44)	18.84 (2.98)	18.67 (4.14)	18.71 (4.38)	1.197	.28
Unhappiness	NPHS 94	1.87 (1.03)	1.19 (.40)	1.60 (.76)	1.60 (.98)	2.971	.09
Stressors	NPHS 94	1.88 (1.20)	.96 (1.48)	1.57 (1.73)	1.68(1.39)	3.868	.05
Non-Internet Communication	Internet	13.87 (2.75)	14.26 (2.64)	11.16 (3.43)	13.65 (2.84)	1.131	.29
Social Isolation	Internet	26.16 (4.61)	24.12 (3.37)	26.27 (4.78)	24.60 (4.71)	.051	.82

Table G5

F-ratios for Gender x Age x HRSNET (Continuous Variables)

Variable	Type of Variable	F-ratio	p-value
Participation	NPHS 96	.515	.48
Social Support	NPHS 96	.773	.38
Self-esteem	NPHS 94	.671	.41
Unhappiness	NPHS 94	.897	.35
Stressors	NPHS 94	2.583	.11
Non-Internet Communication	Internet	.110	.74
Social Isolation	Internet	.007	.94

Table G6

Means within Internet users: (Younger Males)

Variable	Type of Variable	Lower Users' Mean (SD)	Higher Users' Mean (SD)
Participation	Continuous, NPHS	2.11 (1.05)	2.14 (.80)
Social Support	Continuous, NPHS	3.50 (.71)	3.68 (.72)
Self-esteem	Continuous, NPHS	17.20 (4.24)	19.43 (3.24)
Unhappiness	Continuous, NPHS	2.20 (1.14)	1.57 (.79)
Stressors	Continuous, NPHS	1.70 (1.42)	1.26 (1.72)
Non-Internet Communication	Continuous, Internet	14.60 (1.67)	11.32 (3.48)
Social Isolation	Continuous, Internet	26.80 (5.18)	25.86 (4.44)

Table G7

Means within Internet users: (Older Males)

Variable	Type of Variable	Lower Users' Mean (SD)	Higher Users' Mean (SD)
Participation	Continuous, NPHS	2.50 (.71)	2.48 (.85)
Social Support	Continuous, NPHS	3.50 (1.10)	3.50 (1.02)
Self-esteem	Continuous, NPHS	18.84 (2.99)	18.58 (4.72)
Unhappiness	Continuous, NPHS	1.15 (.37)	1.54 (.83)
Stressors	Continuous, NPHS	.60 (.68)	1.61 (1.44)
Non-Internet Communication	Continuous, Internet	14.67 (2.61)	14.17 (2.36)
Social Isolation	Continuous, Internet	24.47 (3.34)	24.42 (4.47)

Table G8

Means within Internet users t: (Younger Females)

Variable	Type of Variable	Lower Users' Mean (SD)	Higher Users' Mean (SD)
Participation	Continuous, NPHS	2.58 (.79)	2.27 (.79)
Social Support	Continuous, NPHS	3.62 (1.12)	3.31 (1.38)
Self-esteem	Continuous, NPHS	17.00 (4.72)	17.00 (5.38)
Unhappiness	Continuous, NPHS	1.64 (.93)	1.64 (.74)
Stressors	Continuous, NPHS	2.00 (1.07)	2.07 (1.69)
Non-Internet Communication	Continuous, Internet	13.50 (3.17)	10.78 (3.46)
Social Isolation	Continuous, Internet	25.73 (4.32)	27.14 (5.65)

Table G9

Means within Internet users: (Older Females)

Variable	Type of Variable	Lower Users' Mean (SD)	Higher Users' Mean (SD)
Participation	Continuous, NPHS	3.00 (.00)	2.11 (1.05)
Social Support	Continuous, NPHS	3.33 (1.21)	3.55 (.69)
Self-esteem	Continuous, NPHS	18.83 (3.25)	19.00 (3.74)
Unhappiness	Continuous, NPHS	1.33 (.52)	1.73 (1.27)
Stressors	Continuous, NPHS	2.17 (2.64)	1.82 (1.33)
Non-Internet Communication	Continuous, Internet	12.75 (2.50)	11.80 (3.90)
Social Isolation	Continuous, Internet	23.00 (3.52)	25.00 (5.40)

Table G 10

Percents within Internet users: (Males)

Variable	Type of Variable	Lower Users		Higher Users		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	20.00	6	13.21	7	.669	.53
Anxiety (Ever)	DIS	31.03	9	40.38	21	.698	.40
Anxiety (3X)	DIS	23.33	7	18.87	10	.235	.63
Anxiety (6X)	DIS	25.00	7	17.65	9	.605	.44
Any Phobia	DIS	60.71	17	31.37	16	6.398	.01
Agoraphobia	DIS	29.63	8	18.00	9	1.38	.24
Social Phobia	DIS	53.57	15	27.45	14	5.308	.02
Simple Phobia	DIS	21.43	6	9.80	5	2.038	.18
Hopelessness	DIS	34.48	10	44.23	23	.733	.39
Nervousness	DIS	27.59	8	32.69	17	.227	.63
Membership	NPHS	73.33	22	71.70	38	.026	.87
Helping	NPHS	40.74	11	64.71	33	4.123	.04

Table G11

Percents within Internet users: (Females)

Variable	Type of Variable	Lower Users		Higher Users		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	30.43	7	20.00	5	.696	.40
Anxiety (Ever)	DIS	43.48	10	40.00	10	.060	.81
Anxiety (3X)	DIS	26.09	6	40.00	10	1.043	.31
Anxiety (6X)	DIS	39.13	9	36.00	9	.050	.82
Any Phobia	DIS	47.83	11	56.00	14	.321	.57
Agoraphobia	DIS	26.09	6	36.00	9	.548	.46
Social Phobia	DIS	21.74	5	32.00	8	.639	.42
Simple Phobia	DIS	26.09	6	24.00	6	.028	.87
Hopelessness	DIS	52.18	12	52.00	13	.000	.99
Nervousness	DIS	43.48	10	32.00	8	.673	.41
Membership	NPHS	69.57	16	56.00	14	.941	.33
Helping	NPHS	45.45	10	65.22	15	1.779	.18

Table G12

Percents within Internet users: (Younger Males)

Variable	Type of Variable	Lower Users		Higher Users		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	40.00	4	6.90	2	6.260	.03
Anxiety (Ever)	DIS	50.00	5	35.71	10	.629	.47
Anxiety (3X)	DIS	40.00	4	27.59	8	.538	.69
Anxiety (6X)	DIS	50.00	5	14.29	4	5.20	.04
Any Phobia	DIS	60.00	6	35.71	10	1.783	.27
Agoraphobia	DIS	33.33	3	17.86	5	.963	.37
Social Phobia	DIS	60.00	6	32.14	9	2.393	.15
Simple Phobia	DIS	20.00	2	7.14	2	1.293	.28
Hopelessness	DIS	80.00	8	53.57	15	2.154	.26
Nervousness	DIS	30.00	3	28.57	8	.007	1.00
Membership	NPHS	60.00	6	68.97	20	.269	.70
Helping	NPHS	33.33	3	51.85	14	.929	.45

Table G13

Percents within Internet users: (Older Males)

Variable	Type of Variable	Lower Users		Higher Users		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	10.00	2	20.83	5	.957	.43
Anxiety (Ever)	DIS	21.05	4	45.83	11	2.867	.09
Anxiety (3X)	DIS	15.00	3	8.33	2	.481	.65
Anxiety (6X)	DIS	11.11	2	21.74	5	.806	.44
Any Phobia	DIS	61.11	11	26.09	6	5.103	.02
Agoraphobia	DIS	27.78	5	18.18	4	.523	.71
Social Phobia	DIS	50.00	9	21.74	5	3.586	.06
Simple Phobia	DIS	22.22	4	13.04	3	.601	.68
Hopelessness	DIS	10.53	2	33.33	8	3.091	.15
Nervousness	DIS	26.32	5	37.50	9	.604	.44
Membership	NPHS	80.00	16	75	18	.155	.73
Helping	NPHS	44.44	8	79.17	19	5.401	.02

Table G14

Percents within Internet users: (Younger Females)

Variable	Type of Variable	Lower Users		Higher Users		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	40.00	6	35.71	5	.056	.81
Anxiety (Ever)	DIS	46.67	7	35.71	5	.358	.55
Anxiety (3X)	DIS	26.67	4	57.14	8	2.773	.10
Anxiety (6X)	DIS	46.67	7	50.00	7	.032	.86
Any Phobia	DIS	53.33	8	71.43	10	1.007	.32
Agoraphobia	DIS	33.33	5	50.00	7	.829	.36
Social Phobia	DIS	33.33	5	42.86	6	.279	.60
Simple Phobia	DIS	20.00	3	28.57	4	.291	.68
Hopelessness	DIS	66.67	10	64.29	9	.018	1.00
Nervousness	DIS	46.67	7	50.00	7	.032	.86
Membership	NPHS	66.67	10	64.29	9	.018	1.00
Helping	NPHS	40.00	6	50.00	7	.293	.59

Table G15

Percents within Internet users: (Older Females)

Variable	Type of Variable	Lower Users		Higher Users		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	0.00	0	0.00	0	--	--
Anxiety (Ever)	DIS	16.67	1	9.09	1	.215	1.00
Anxiety (3X)	DIS	16.67	1	18.18	2	.006	1.00
Anxiety (6X)	DIS	16.67	1	18.18	2	.006	1.00
Any Phobia	DIS	16.67	1	36.36	4	.726	.39
Agoraphobia	DIS	0.00	0	18.18	2	1.236	.52
Social Phobia	DIS	0.00	0	18.18	2	1.236	.52
Simple Phobia	DIS	16.67	1	18.18	2	.006	1.00
Hopelessness	DIS	16.67	1	36.36	4	.726	.60
Nervousness	DIS	33.33	2	9.09	1	1.570	.21
Membership	NPHS	66.67	4	45.45	5	.701	.62
Helping	NPHS	60.00	3	88.89	8	1.593	.51

Table G16

Percents within Internet users: (Younger Ages)

Variable	Type of Variable	Lower Users		Higher Users		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	60.00	15	84.09	37	4.983	.03
Anxiety (Ever)	DIS	52.00	13	44.19	19	.387	.53
Anxiety (3X)	DIS	32.00	8	36.36	16	.011	.72
Anxiety (6X)	DIS	48.00	12	25.58	11	2.619	.06
Any Phobia	DIS	56.00	14	48.84	21	.325	.57
Agoraphobia	DIS	33.33	8	30.23	13	.000	.79
Social Phobia	DIS	44.00	11	37.21	16	.305	.58
Simple Phobia	DIS	20.00	5	13.95	6	.097	.52
Hopelessness	DIS	72.00	18	55.81	24	1.754	.19
Nervousness	DIS	40.00	10	34.88	15	.026	.67
Membership	NPHS	64.00	16	65.91	29	.026	.87
Helping	NPHS	37.50	9	52.38	22	1.358	.24

Table G17

Percents within Internet users: (Older Ages)

Variable	Type of Variable	Lower Users		Higher Users		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	92.31	24	85.71	30	.638	.42
Anxiety (Ever)	DIS	20.00	5	34.29	12	1.466	.23
Anxiety (3X)	DIS	15.38	4	11.43	4	.205	.65
Anxiety (6X)	DIS	12.50	3	20.59	7	.645	.50
Any Phobia	DIS	50.00	12	29.41	10	2.533	.11
Agoraphobia	DIS	20.83	5	18.18	6	.063	1.00
Social Phobia	DIS	37.50	9	20.59	7	2.014	.16
Simple Phobia	DIS	20.83	5	14.71	5	.370	.73
Hopelessness	DIS	12.00	3	34.29	12	3.863	.05
Nervousness	DIS	28.00	7	28.57	10	.002	.96
Membership	NPHS	23.08	6	34.29	12	.901	.34
Helping	NPHS	47.83	11	81.82	24	7.180	.01

Appendix H: OVERALL COMPARISONS

(Between Internet Sample and General Population Sample)

Table H1

Internet Sample versus NPHS/DIS For All Continuous Variables

Variable	Type of Variable	Comparison Sample Mean (SD)	Internet Sample Mean (SD)	F-ratio	p-value
Participation	NPHS 96	2.80 (.46)	2.36 (.82)	15.346	<0.0001
Social Support	NPHS 96	3.75 (0.73)	3.53 (0.97)	10.058	0.002
Self-Esteem	NPHS 94	20.04 (3.04)	18.02 (4.56)	31.725	<0.0001
Unhappiness	NPHS 94	1.27 (0.56)	1.56 (0.84)	28.679	<0.0001
Stressors	NPHS 94	1.02 (1.30)	1.63 (1.64)	27.471	<0.0001

Table H2

Internet Sample versus NPHS/DIS For All Categorical Variables

Variable	Type of Variable	Comparison Sample		Internet Sample		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	14.61	578	18.38	25	1.485	0.223
Anxiety (Ever)	DIS	10.37	410	38.35	51	100.677	<.0001
Anxiety (3X)	DIS	35.85	147	25.74	35	4.705	.030
Anxiety (6X)	DIS	57.56	236	27.48	36	35.933	<.0001
Any Phobia	DIS	29.63	1172	45.04	59	14.294	<.0001
Agoraphobia	DIS	9.58	379	25.58	33	35.252	<.0001
Social Phobia	DIS	5.71	226	32.82	43	151.532	<.0001
Simple Phobia	DIS	25.31	1001	17.56	23	4.058	.044
Hopelessness	DIS	26.32	1041	45.86	61	24.960	<.0001
Nervousness	DIS	21.31	843	33.83	45	11.862	.001
Membership	NPHS	33.63	4118	69.40	93	73.974	<.0001
Helping	NPHS	29.21	3564	56.80	71	45.303	<.0001

Table H3

Means for Gender x NET (Continuous Variables)

Variable	Type of Variable	Comparison Sample Mean (SD)		Internet Sample Mean (SD)		F-ratio	p-value
		Males	Females	Males	Females		
Participation	NPHS 96	2.77 (.49)	2.82 (.44)	2.33 (.83)	2.45 (.83)	4.929	0.026
Social Support	NPHS 96	3.67 (.84)	3.82 (.61)	3.58 (.89)	3.48 (1.09)	3.635	0.057
Self-Esteem	NPHS 94	20.18 (2.78)	19.92 (3.22)	18.24 (4.57)	17.75 (4.46)	0.274	0.601
Unhappiness	NPHS 94	1.27 (.57)	1.27 (.55)	1.53 (.82)	1.62 (.90)	0.379	0.538
Stressors	NPHS 94	.92 (1.17)	1.09 (1.40)	1.41 (1.68)	1.98 (1.54)	4.208	0.04

Table H4

Means for Age x NET (Continuous Variables)

Variable	Type of Variable	Comparison Sample Mean (SD)		Internet Sample Mean (SD)		F-ratio	p-value
		Younger	Older	Younger	Older		
Participation	NPHS 96	2.80 (.45)	2.80 (.47)	2.25 (.83)	2.47 (.81)	7.946	0.005
Social Support	NPHS 96	3.81 (.66)	3.69 (.81)	3.54 (.97)	3.54 (.97)	0.290	0.590
Self-Esteem	NPHS 94	20.88 (3.05)	19.97 (3.02)	17.96 (4.40)	18.68 (4.01)	2.754	0.097
Unhappiness	NPHS 94	1.30 (.58)	1.24 (.53)	1.70 (.87)	1.42 (.80)	1.825	0.177
Stressors	NPHS 94	1.24 (1.44)	.70 (1.00)	1.69 (1.55)	1.39 (1.46)	2.285	0.131

Table H5

F-ratios for Age x Gender x NET (Continuous Variables)

Variable	Type of Variable	F-ratio	p-value
Participation	NPHS 96	4.225	0.040
Social Support	NPHS 96	0.026	0.872
Self-Esteem	NPHS 94	3.261	0.071
Unhappiness	NPHS 94	2.333	0.127
Stressors	NPHS 94	0.296	0.586

Table H6

Means For Comparison Sample versus Internet: (Younger Males)

Variable	Type of Variable	Comparison Sample Mean (SD)	Internet Mean (SD)
Participation	Continuous, NPHS	2.77 (.47)	2.14 (.86)
Social Support	Continuous, NPHS	3.75 (.75)	3.63 (.71)
Self-Esteem	Continuous, NPHS	20.15 (2.88)	18.59 (3.89)
Unhappiness	Continuous, NPHS	1.29 (.56)	1.74 (.92)
Stressors	Continuous, NPHS	1.09 (1.27)	1.38 (1.64)

Table H7

Means For Comparison Sample versus Internet: (Older Males)

Variable	Type of Variable	Comparison Sample Mean (SD)	Internet Mean (SD)
Participation	Continuous, NPHS	2.77 (.50)	2.50 (.77)
Social Support	Continuous, NPHS	3.57 (.95)	3.51 (1.04)
Self-Esteem	Continuous, NPHS	20.23 (2.62)	18.58 (3.89)
Unhappiness	Continuous, NPHS	1.25 (.58)	1.36 (.68)
Stressors	Continuous, NPHS	.65 (.93)	1.18 (1.26)

Table H8

Means For Comparison Sample versus Internet: (Younger Females)

Variable	Type of Variable	Comparison Sample Mean (SD)	internet Mean (SD)
Participation	Continuous, NPHS	2.82 (.43)	2.43 (.79)
Social Support	Continuous, NPHS	3.86 (.55)	3.46 (1.24)
Self-Esteem	Continuous, NPHS	20.03 (3.19)	17.00 (4.96)
Unhappiness	Continuous, NPHS	1.30 (.59)	1.64 (.83)
Stressors	Continuous, NPHS	1.36 (1.56)	2.03 (1.38)

Table H9

Means For Comparison Sample versus Internet: (Older Females)

Variable	Type of Variable	Comparison Sample Mean (SD)	Internet Mean (SD)
Participation	Continuous, NPHS	2.82 (.45)	2.38 (.96)
Social Support	Continuous, NPHS	3.78 (.67)	3.47 (.87)
Self-Esteem	Continuous, NPHS	19.79 (3.27)	18.94 (3.47)
Unhappiness	Continuous, NPHS	1.23 (.49)	1.59 (1.06)
Stressors	Continuous, NPHS	.74 (1.04)	1.94 (1.82)

Table H10

Percents for Comparison Sample versus Internet: (Males)

Variable	Type of Variable	Comparison Sample		Internet Sample		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	10.21	152	15.12	13	2.088	0.148
Anxiety (Ever)	DIS	5.71	85	36.90	31	113.289	<.0001
Anxiety (3X)	DIS	30.59	26	22.09	19	1.591	.207
Anxiety (6X)	DIS	50.59	43	21.95	18	14.763	<.0001
Any Phobia	DIS	19.54	291	40.24	33	20.344	<.0001
Agoraphobia	DIS	5.91	88	21.25	17	28.611	<.0001
Social Phobia	DIS	4.03	60	35.37	29	--	<.0001
Simple Phobia	DIS	15.98	238	13.41	11	.385	.535
Hopelessness	DIS	22.83	340	42.86	36	17.526	<.0001
Nervousness	DIS	15.18	226	32.14	27	16.955	<.0001
Membership	NPHS	31.64	1818	73.25	63	67.137	<.0001
Helping	NPHS	24.87	1422	56.96	45	42.46	<.0001

Table H11

Percents for Comparison Sample versus Internet: (Females)

Variable	Type of Variable	Comparison Sample		Internet Sample		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	17.27	426	25.00	12	1.953	0.162
Anxiety (Ever)	DIS	13.18	325	41.67	20	32.272	<.0001
Anxiety (3X)	DIS	37.23	121	33.33	16	.273	.601
Anxiety (6X)	DIS	59.38	193	37.50	18	8.153	.004
Any Phobia	DIS	35.73	881	52.08	25	5.465	.019
Agoraphobia	DIS	11.80	291	31.25	15	16.661	<.0001
Social Phobia	DIS	6.73	166	27.08	13	--	<.0001
Simple Phobia	DIS	30.94	763	25.00	12	.779	.377
Hopelessness	DIS	28.43	701	52.08	25	12.829	<.0001
Nervousness	DIS	25.02	617	37.50	18	3.884	.049
Membership	NPHS	35.38	2300	62.50	30	15.291	<.0001
Helping	NPHS	33.04	2142	55.56	25	10.221	<.0001

Table H12

Percents for Comparison Sample versus Internet: (Younger Males)

Variable	Type of Variable	Comparison Sample		Internet Sample		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	12.13	122	15.38	6	--	0.464
Anxiety (Ever)	DIS	7.26	73	39.47	15	--	<.0001
Anxiety (3X)	DIS	28.77	21	30.77	12	.049	.825
Anxiety (6X)	DIS	47.95	35	23.68	9	6.148	.013
Any Phobia	DIS	20.97	211	42.11	16	9.609	.002
Agoraphobia	DIS	6.06	61	21.62	8	--	.002
Social Phobia	DIS	4.47	45	39.47	15	--	<.0001
Simple Phobia	DIS	16.80	169	10.53	4	1.042	.307
Hopelessness	DIS	26.35	245	60.53	23	25.110	<.0001
Nervousness	DIS	16.70	168	28.95	11	3.866	.049
Membership	NPHS	28.94	974	66.67	26	26.458	<.0001
Helping	NPHS	26.41	887	47.22	17	7.899	.005

Table H13

Percents for Comparison Sample versus Internet: (Older Males)

Variable	Type of Variable	Comparison Sample		Internet Sample		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	6.21	30	15.56	7	--	0.029
Anxiety (Ever)	DIS	2.48	12	31.82	14	--	<.0001
Anxiety (3X)	DIS	41.67	5	11.11	5	--	.026
Anxiety (6X)	DIS	66.67	8	16.67	7	--	.002
Any Phobia	DIS	16.56	80	40.48	17	14.669	<.0001
Agoraphobia	DIS	5.59	27	21.95	9	--	.001
Social Phobia	DIS	3.11	15	33.33	14	--	<.0001
Simple Phobia	DIS	14.29	69	16.67	7	.177	.674
Hopelessness	DIS	19.67	95	25.00	11	.713	.398
Nervousness	DIS	12.01	58	31.82	14	13.416	<.0001
Membership	NPHS	35.48	844	77.78	35	34.191	<.0001
Helping	NPHS	22.68	535	65.12	28	42.381	<.0001

Table H14

Percents for Comparison Sample versus Internet: (Younger Females)

Variable	Type of Variable	Comparison Sample		Internet Sample		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	18.90	309	37.93	11	6.645	0.016
Anxiety (Ever)	DIS	19.98	245	58.62	17	--	<.0001
Anxiety (3X)	DIS	35.51	87	41.38	12	.387	.534
Anxiety (6X)	DIS	58.78	144	48.28	14	1.171	.279
Any Phobia	DIS	36.21	592	62.07	18	8.207	.004
Agoraphobia	DIS	11.93	195	41.38	12	--	<.0001
Social Phobia	DIS	7.34	120	37.93	11	--	<.0001
Simple Phobia	DIS	31.56	516	24.14	7	.728	.393
Hopelessness	DIS	29.72	486	65.52	19	17.269	<.0001
Nervousness	DIS	24.46	400	48.28	14	8.644	.003
Membership	NPHS	33.67	1201	65.52	19	13.016	<.0001
Helping	NPHS	34.02	1210	44.83	13	1.496	.221

Table H15

Percents for Comparison Sample versus Internet: (Older Females)

Variable	Type of Variable	Comparison Sample		Internet Sample		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	14.08	117	0.00	0	--	0.096
Anxiety (Ever)	DIS	9.63	80	11.76	2	--	.676
Anxiety (3X)	DIS	42.50	34	17.65	3	3.670	.055
Anxiety (6X)	DIS	61.25	49	17.65	3	10.718	.001
Any Phobia	DIS	34.78	289	29.41	5	.212	.645
Agoraphobia	DIS	11.55	96	11.76	2	--	1.000
Social Phobia	DIS	5.54	46	11.76	2	--	.249
Simple Phobia	DIS	29.72	247	17.65	3	1.169	.280
Hopelessness	DIS	25.87	215	29.41	5	--	.781
Nervousness	DIS	26.11	217	17.65	3	--	.581
Membership	NPHS	37.46	1099	52.94	9	1.728	.189
Helping	NPHS	31.84	932	78.57	11	13.968	<.0001

Table H16

Percents for Comparison Sample versus Internet: (Younger Ages)

Variable	Type of Variable	Comparison Sample		Internet Sample		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	13.62	431	24.64	17	3.372	0.0663
Anxiety (Ever)	DIS	12.04	318	47.06	32	72.256	<.0001
Anxiety (3X)	DIS	33.96	108	34.78	24	.017	.896
Anxiety (6X)	DIS	56.29	179	33.82	23	11.334	.001
Any Phobia	DIS	30.41	803	51.47	35	13.769	<.0001
Agoraphobia	DIS	9.69	256	31.34	21	33.354	<.0001
Social Phobia	DIS	6.25	165	39.71	27	112.696	<.0001
Simple Phobia	DIS	25.94	685	16.18	11	3.308	.069
Hopelessness	DIS	27.68	731	61.76	42	37.770	<.0001
Nervousness	DIS	21.51	568	36.76	25	9.026	.003
Membership	NPHS 96	31.37	2175	65.22	45	36.144	<.0001
Helping	NPHS 96	30.32	2097	46.96	31	8.552	.003

Table H17

Percents for Comparison Sample versus Internet: (Older Ages)

Variable	Type of Variable	Comparison Sample		Internet Sample		Chi-Square	p-value
		%	N	%	N		
Depression	DIS	11.19	147	11.29	7	0.000633	0.980
Anxiety (Ever)	DIS	7.00	92	26.23	16	--	<.0001
Anxiety (3X)	DIS	42.39	39	12.90	8	15.188	<.0001
Anxiety (6X)	DIS	61.96	57	16.95	10	29.501	<.0001
Any Phobia	DIS	28.08	369	37.29	22	2.349	.125
Agoraphobia	DIS	9.36	123	18.97	11	5.815	.016
Social Phobia	DIS	4.64	61	27.12	16	53.886	<.0001
Simple Phobia	DIS	24.05	316	16.95	10	1.572	.210
Hopelessness	DIS	23.59	310	26.23	16	.224	.636
Nervousness	DIS	20.93	275	27.87	17	1.679	.195
Membership	NPHS	36.57	1943	70.97	44	31.118	<.0001
Helping	NPHS	27.75	1467	68.42	39	46.077	<.0001